Impact Evaluation of Business Process Re-engineering (BPR) in the Department of Academic Administration at a University of Technology (UoT) in South Africa

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DECLARATION

I, Xolani Sunshine Kunene, declare that this dissertation is my own work. This work has not previously been submitted for another degree. All sources used have been acknowledged and referenced.

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ABSTRACT

Organizational evolution is an inevitable trend in higher educational institutions. Aside from being dynamic entities themselves, organizations operate under dynamic environments and exist to serve the needs of other entities that equally evolve. Most importantly, the services offered by organizations are susceptible client's deliberate or induced changes. To remain relevant is a function of the quality of service offered and ability to continually add value in alignment with current demands. Ensuring this continuity is a monumental challenge that requires organizations to implement suitable strategies to monitor and evaluate their business processes to remain relevant, efficient, and competitive. This has given credence to the implementation of Business Process Re-engineering (BPR) in higher education to address operational challenges.

The primary aim of this study is to investigate the impact of Business Process Re-engineering implementation in the Department of Academic Administration in a University of Technology in South Africa. The research study objectives were:

- To examine employee's awareness of the broad principles of Business Process Re-engineering implementation in Higher Education;
- To investigate the impact of Business Process Re-engineering on employee's work daily routines, and
- To investigate perception of employees on the success of Business Process Re-engineering.

The research main question was: What impact has Business Process Re-engineering implementation had in the Department of Academic Administration in a University of Technology in South Africa? The sub-questions were:

- What level of awareness exist amongst employees about Business Process Re-engineering?
- What are the factors relevant for Business Process Re-engineering success?
- What is the implementation status of Business Process Re-engineering in the Department of Academic Administration?

A non-probability sampling method was used in this study. Relevant information was obtained through the application of the questionnaire, which was then classified into themes. A quantitative method approach was used. Self-administered questionnaires were used for data collection, consisting of both structured and one open-ended survey question. The study population included one hundred and ten employees and a sample of sixty, total returned responses of forty-nine (49). Respondents included both academic and administrative (support) staff members. Data analysis was conducted through Statistical Package for the Social Sciences (SPSS) version 23, for both descriptive and inferential statistics.

The findings of this study indicate that the implementation of Business Process Re-engineering had a positive impact in a specific University of Technology. First positive impact is based on employee perception that automation has resulted in an increased use of online services, secondly departments were able to respond rapidly to problems and the strategic goal of the project was aligned with the departmental goal.

This study contributes towards an under-researched area of Business Process Re-engineering implementation in the administrative sector in higher education. The researcher envision that the findings will help in expanding Business Process Re-engineering to other departments in a University of Technology, as well as provide BPR strategies to enhance the administrative quality of university services.

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LIST OF ABBREVIATIONS

BPR:	Business Process Re-engineering
CAO:	Central applications office
CSF:	Critical Success Factors
DHET:	Department of higher education
DOJ&CD:	Department of justice and constitutional development
DSW:	Department of Solid Waste Management
DUT:	Durban University of Technology
EM:	Engineering Management
ERP:	Enterprise Resource Planning
FET:	Further Education Technical College
HE:	Higher Education
HEI:	Higher Education Institutions
IT:	Information Technology
ILS:	Integrated Learning Systems
KSF:	Key Success Factors
KZN:	KwaZulu-Natal
NMMM:	Nelson Mandela Metropolitan Municipality
NPM:	New Public Management
NW:	North West
OP:	Organisational Performance
PFMA:	Public Finance Management Act
PQM:	Programme Quality Mix
SPSS:	Statistical package for social sciences
TQM:	Total Quality Management
TUT:	Tshwane University of Technology
TVET:	Technical and vocational education and training
UKZN:	University of KwaZulu-Natal
UoT:	University of Technology

CHAPTER 1: GENERAL OVERVIEW AND INTRODUCTION OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Due to the constant changes in today's business processes, it has become vital that organisations monitor and evaluate their processes. Constant monitoring enables organisations to remain relevant, competitive and efficient through their operations. Business Process Re-engineering (BPR) is a strategy to promote efficiency in an organisation by examining interactions between its internal processes and identifying processes that require improvements (Pasaribu, Anggadwita, Hendayani, Kotjoprayudi and Apiani, 2021:625-627).

South African (SA) Higher Education Institutions (HEI's) have adopted BPR, with other so-called private sector management techniques, to respond to the changing environment and customer needs. These were adopted as a result of the reform initiatives spearheaded by the national government to achieve efficiency and alignment in the Higher Education sector. However, as BPR is a new concept in Higher Education it is not that well understood and may face the challenge of mis-application when implemented (Swart, 2018:4). Concepts not properly understood are bound to be incorrectly implemented. Pasaribi et al. (2021:626-6270) notes the different approaches of implementation BPR in higher education, include a five-step method and a four sequential method, and that an implementation of BPR does not follow a single method. It is therefore critical that BPR be understood in the context of Higher Education and how it can be appropriately applied.

The aim of the Department of Higher Education and Training (DHET) to increase enrolment has forced universities to focus on their administrative processes. Increasing enrolment affects not only the academic enterprise or classroom sector of a university but also student administration because applications for admission increase, and students go through a registration administrative process.

Administration has therefore had to become more competitive in terms of cost (doing more with less), speed (reduced cycle time) and quality of service (provision of superior service). Boje, Hillon, and Mele (2017:2-3) observe, that universities adopt BPR to improve not only teaching and learning, but also the support system which includes administrative operations.

1.2 STATEMENT OF THE PROBLEM

BPR implementation continues to be a challenge in Higher Education Institutions due to a lack of standard implementation methodology (Pasaribu et. al, 2021:623; and Lu, 2018:719). Senior management at the UoT under study, has implemented BPR in the Department of Academic Administration as an improvement strategy.

There is however no clarity on how successful this process has been in achieving its intended goals. It is therefore vital to investigate BPR undertaking, as a means of evaluating its impact. The research project critically investigated the impact of BPR implementation in the Department of Academic Administration at the UoT which is the subject of this study.

Most Higher Education Institution studies tend to prioritise teaching and learning as well as the research sector. In this study the focus is on administration and how its operations can be improved to help students and the university operate efficiently.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to examine the impact of BPR implementation in the Department of Academic Administration in a UoT. BPR is a management method that entails fundamental redesign of old business processes for the pursuit of new organizational directions to gain operational improvement in cost, speed, quality, and service (AbdEllatif, Farhan and Shehata, 2017: 8; and Mokone 2011: 4). Its focus is on the analysis of current processes in an organization to evaluate and

redesign these processes. In this analysis bottlenecks and wastages are highlighted. The major output of BPR is efficiency in operations.

Public institutions including Universities of Technology (UoT's) are expected to comply with the Public Finance Management Act 1999 (PFMA), which is applicable to state funded (public) institutions in SA (Swart and Swanepoel, 2019:122-123). The Public Finance Management Act is a legal framework which seeks to enhance good corporate governance because it promotes sound financial management and integrity in the management of public higher educational institutions and their finances (Public Finance Management Act 1999 [50] [1] [b]). The implementation of BPR or any improvement method positively supports compliance with the Public Finance Management Act. Computer systems and Information Technology (IT) are intricately embedded in BPR. According to Nevondwe, Odeku and Tshoose (2014: 269), IT and its governance is one of the pillars of good corporate governance. To mitigate against risks in computer systems used in academic administration there are embedded checks and balances in the form of log files and other controls that capture activities and identify users and their actions.

Departments in public higher education institutions continuously strive for effective use of resources and to extract maximum value through commonly accepted ways. This results in a shift from administrative performance to statutory management of resources whereby work is done in accordance with compliance to laws (De Jager, 2000: 3). This requires a total integration of operations based on the Public Finance Management Act premise of following approved procedures, be it operational or management at a strategic level. Integration also facilitates reporting and management of processes by internal and external stakeholders.

Information Technology (IT) is central in execution of administrative operations in Higher Education. Academic administration relies on IT for operations to be carried out both in automation and integration of these processes. Ng'ambi, Brown, Bozalek, Gachago and Wood (2016:1) record, five evolutionary stages that IT has undergone in Higher Education. In the first instance Information Technology served to automate operations in institutions for example, when processing

applications. Instead of limiting the process to paper forms, computer technology was used to also create soft copy of student records. This early Information Technology era mainly involved automation of specific tasks, and operations in departments were generally independent fragmented and had operational gaps as noted in Pasaribu et al (2021:623) and Lucas (2016:13). In the second phase, Information Technology facilitated quality of stored information as reported in Ng'ambi et al (2016:1). Unlike in the first instance this era sought to improve tasks so that an electronic student record would be captured to improve tasks and incorporate important information and in a reporting format suitable to those who require this. However not many researchers have focused on how students and administrators, in particular, benefit from this development. In the third phase, IT became a strategic partner helping institutions to compete in the sector. This is the era when institutions bought the latest information systems that were believed to provide solutions to their existing problems or some that were said to improve operations. In the fourth stage, institutions embarked on integrating systems into single platforms. This saw growth in Enterprise Resource Programme (ERP) vendors as observed by Mashabela and Pillay (2017:33). These systems promised universities single packages to host operational systems in one unit. The fifth stage includes internet access whereby institutions made more use of internet-based services like e-mail communication and cloud services.

Internet access and its capabilities have given rise to e-business in Higher Education Institutions. Paper based information transfer has been replaced by computerised data sharing platforms in the Higher Education Institution administration sector, while at the same time in the academic sector e-learning has been on the rise. Bagarukayo and Kalema (2015:168-169) describe e-business as processes facilitated through online technologies which focus on accessing information and material through computer technology. Universities and other public sector companies have embraced e-business to improve service delivery and customer service. This has improved performance by eliminating cost barriers associated with physical connectivity.

The transformation of administrative operations has compelled Higher Education Institutions to increase investment in Information Technology to integrate administrative operations (Bagarukayo and Kalema 2015:168). Integration has not ended with internal processes, it has included other stakeholders involved in the operational processes. For example, the suppliers of SMS credits are able to monitor the level of available credits in the institution which allows them to source and invoice the institution when credits go below a certain level. This integration eliminates the risk of the institution or its departments running out of credits so they can continue operating with the help of their supplier.

Swart (2018: 50) points out that despite its many benefits, Information Technology must address BPR strategy and alignment for it to be successful. When implementing BPR, departments/institutions must be seen to improve from automation and integration of processes and be able to bridge the challenge of geographic location. Workstations within the Department of Academic administration are spread across different areas of a during registration as well as in terms of student records. Information Technology plays an enabling role for successful implementation of administration; the BPR project which is the subject of this study should address operational challenge of using Information Technology systems.

1.4 RESEARCH AIMS AND OBJECTIVES

The primary aim of this study was to investigate the impact of BPR implementation in the Department of Academic Administration in a University of Technology in South Africa. The research study objectives were:

- To examine employees' awareness of the broad principles of Business Process Re-engineering implementation in the institution under study;
- To investigate the impact of Business Process Re-engineering on employees' daily work routines; and
- To investigate the perception of employees regarding the success of the Business Process Re-engineering process in the Higher Education Institution under study.

1.5 RESEARCH QUESTIONS

There was one main research question for this study, followed by four sub-questions. The main research question was:

What impact has Business Process Re-engineering implementation had in the Department of Academic Administration in a University of Technology in South Africa?

The sub-questions were:

- What level of awareness exist amongst employees about Business Process Re-engineering?
- What are the factors relevant for Business Process Re-engineering success?
- What is the implementation status of Business Process Re-engineering in the Department of Academic Administration?

1.6 RESEARCH METHODOLOGY

The study followed a quantitative approach as the questionnaires were administered to 60 staff members. Respondents included staff members from both the academic and support sectors of the UoT.

All questions were presented in English and linked to the research aims and objectives. The target population was considered by the researcher as the study sought to evaluate the impact of Business Process Re-engineering in the Department of Academic Administration in a UoT in South Africa. A non-probability sampling method was used in this study. Relevant information was obtained through the application of the questionnaire, which was then classified into themes. Information was analysed using statistical program and recommendations and conclusions were drawn.

1.7 SCOPE AND DEMARCATION OF STUDY

This study was conducted in a single UoT located in KwaZulu-Natal. Sections included in this include departments intrinsically involved in student registration, members from faculties, IT, registrar, examinations and Department of Academic Administration. Members excluded from the study include student affairs, teaching and learning, student finance, human resources and development. The reason for exclusion of the above, is these departments fall outside the scope of this study, their processes are however interlinked with those in the Department of Academic Administration.

1.8 CONTRIBUTION OF THE STUDY

This study contributes to the literature on the evaluation of the implementation of BPR in Higher Education in South Africa. Furthermore, the study may assist in the improvement of processes in the university. The findings of this study could form the basis for future planning and decision making in a UoT and Higher Education Institutions in South Africa.

Given the high costs of BPR implementation and the need to address operational challenges facing student administrators, it is important to understand how to implement BPR. This research will contribute to the body knowledge of BPR in higher education.

Research in Higher Education tends to concentrate on teaching and learning, leaving student administration and other operational aspects less explored. Naidoo and Sibiya (2018:352) and Gallifa and Batalle (2010:158) observe the prevalence of under-researched areas in higher education, including processes in administration sector. Processes like student registration cannot be fully utilised to contribute positively as strategic tools as these appear neglected and not fully integrated into the overall strategic success of the organisation. Operational challenges in areas like student registration can negatively affect strategic goals since student enrolment constitutes a critical part in university funding in terms of

student tuition fees and for reporting purposes to the Department of Higher Education (DHET).

The results of this study are expected to provide a comprehensive understanding of BPR implementation and current challenges. The findings will be applicable to the Higher Education sector in South Africa, including traditional universities, universities of technology, comprehensive universities, Technical and Vocational Education Training (TVET) colleges and private educational institutions.

1.9 SOUTH AFRICAN HIGHER EDUCATION REFORMS

The South African Higher Education sector has undergone drastic changes in the past 20 years, with government spearheading consolidation of institutional "mergers" (Mavetera, 2012:1). This restructuring has resulted in the creation of three types of universities: Universities of Technology, Traditional Universities and Comprehensive Universities. Most Universities of Technology are mergers of two or more Technikons or/and Colleges of Education, after which one new institution emerges with a university status. One distinguishing factor is the qualification these institutions offer. Mokoena and Dhurup (2016:312) cite Programme Quality Mix (PQM) as one of the distinguishing factors between the different types of universities. The PQM lists approved qualifications that can be offered to students by an institution. Universities of Technology offer predominantly diploma programmes and are not as heavily involved in research compared to traditional universities.

The objectives for this consolidation included the desire by the SA government to improve "administrative governance of higher education institutions" (Arnolds, Stofile and Lillah, 2013: 11). Administrative processes had been under pressure for some time resulting in inefficient operations in administrative departments and lack of good governance. Mergers also sought to address operational challenges that resulted in ineffective service provision.

Higher Education Institutions in South Africa have identified student enrolment as one of the competitive areas. State funding to institutions is partly based on

universities meeting their enrolment target. This forces universities to adopt competitive strategies to recruit students and to better manage student registrations and other administrative processes. Following a 2012 tragedy at the University of Johannesburg when a parent was fatally wounded when accompanying her son to apply for admission (Mashabela and Pillay, 2017:33), student registration and related processes continue to be in the spotlight in SA. This incident revealed a gap in the way universities manage student applications, meaning that information should be made available to applicants without them having to physically come to university. These operational processes fall under academic administration and are relevant for this study. Despite the availability in South Africa of the latest computer technology, universities still experience extended registration periods and lack of real-time data. The question is how the Department of Academic Administration can exploit BPR to improve operational processes and customer service (Salleh and Sulaiman 2012: 2).

South African public sector institutions need to look into their own operational issues to avoid corporate disasters in the sector (Chigudu 2018:2). This is the same sector that Universities of Technology operate in and institutions are facing many complex administrative challenges. These challenges result in institutions not meeting their strategic goals. The gap between planned improvements and the actual situation on the ground has put pressure on institutions to examine improvement initiatives. In many Higher Education Institutions various improvement projects have been undertaken whereby administrative staff have identified areas where operations are affected by delays and bottlenecks. Huge investments have been undertaken to secure the latest IT systems and staff training, but with few results, hence there is a need for thorough examination.

Close management of institutions by central government has hindered efforts to initiate reform processes. This form of management makes it difficult for institutions to effect change where they see the need to improve administrative cost in response to reduced funding by the state. The emphasis to improve administrative efficiency provides hope in public sectors like Higher Education (Olivier, 2017: 1). Institutions are being encouraged to adopt improvement methodologies like BPR

which are already used in the private sector. The benefits of these methodologies include lower costs and elimination of waste.

1.10 DISSERTATION OUTLINE

This study comprised the following chapters:

Chapter 1 Introduction and background to the study

This chapter focused on the introduction and the background of the study, including an outline of the problem statement. The purpose of the study, research objectives, research method and design are spelled out in this chapter.

Chapter 2 Literature review

Chapter 2 focused on a review of the literature regarding BPR in Higher Education,

Chapter 3 Research methodology

This chapter explains the research methodology employed in this research. It details the objectives of the study, the target population group, research design with motivation for the choice of chosen method, measuring instruments, statistical analysis methods and procedure followed.

Chapter 4 Findings

This chapter focus is on analysis of and interpretation of the data collected in the survey.

Chapter 5 Conclusions and recommendations

Chapter 5 presented the recommendations in relation to the research findings. Recommendations were made based on the findings.

1.11 SUMMARY

This chapter presented an overview of this study. It discussed the introduction, problem statement, purpose of the study, research objectives, research questions,

research methodology, study contribution, rationale and delimitation, and a brief literature review of prior research on BPR.

The following chapter presented a detailed review of BPR.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter focuses on a review of the relevant literature on BPR. Presently the literature underpinning BPR in Higher Education is limited, despite the growing popularity of BPR as an improvement management technique. The need for embarking on BPR in the Department of Academic Administration was identified as a response to operational challenges and the desire to improve customer satisfaction. In essence, the objectives include the identification of best BPR practice, and the development of implementation methodology for Higher Education. This chapter seeks to explore the related literature pertinent to the study.

2.2 THEORETICAL FRAMEWORK

This study dealt with the implementation of BPR in the Department of Academic Administration, in a UoT in South Africa. Higher education institutions are affected by constant changes both in academic and non-academic spheres (Lombard, 2020:1). These changes reveal student expectations and demands. Administrative processes affect quality of service provision in higher education institutions.

Researchers in the field of BPR agree that the implementation of this management tool leads to cost reduction, speed of production / service provision, and improve quality (Nkomo and Marnewick, 2020:1; Harb and Abazid, 2018:100; Ahmad, Francis and Zairi, 2007:451).

2.3 INTERNATIONAL EXPERIENCE OF BUSINESS PROCESS RE-ENGINEERING

The inter-connected world has put pressure on universities and other organizations to find ways of empowering students and graduates with skills to make them succeed in this fast-changing world (Fleaca and Stanciu, 2019:1051). Universities have sought to implement BPR to facilitate provision of these skills, through the investment on Information Technology (IT) and human capital. This approach has

developed to incorporate this management tool in other education areas. Only Engineering education collaborates to that level in South Africa, as they link with Botswana and Australia (Kloot:2019:10) Other educational sector in South Africa can benefit similarly through these collaborations.

Universities across the African continent have embarked on BPR to improve functional areas to the benefit of their stakeholders. These include Financial Management Systems (FMS) to improve financial reporting (Makokha, 2013:93).

Duarte (2014:27) studied the implementation of BPR in a Portuguese Higher Education Institution (Porto Polytechnic Institute), undertaken to improve administrative services by taking advantage of IT. In the project, the system sought to take advantage of IT features and provide superior administrative service to students. These included using communication system menus for new students, marketing and maintaining links with alumni. In the studies by Abdous (2011:427); Abdous and He (2008:1), Higher Education Institution undertook BPR based on internal and external drivers. Internal drivers consist of factors like the desire to improve operations. External drivers include factors like changing customer requirements, and in both instances, the institution is forced to undertake BPR. One of the research questions of this study was ‘what were the reasons for implementing BPR? Valuable lessons are presented in Krishna, Kassaw and Prasad (2015: 1403) regarding the adoption of processes-based thinking in Higher Education in BPR. SA institutions may extract useful methods from other studies to utilise BPR indicated in this study.

2.4 SOUTH AFRICAN EXPERIENCE OF BUSINESS PROCESS RE-ENGINEERING

BPR research projects have be common in South African public sector organisations, rather than universities. In this section, a short summary is presented of notable projects undertaken within the public sector in South Africa.

Nelson Mandela Metropolitan Municipality embarked on BPR after a review of its administrative system which indicated process bottlenecks and duplication of

processes. The municipality undertook BPR to improve customer service and improve administrative processes (Nelson Mandela Metropolitan Municipality 2016:5). The provincial government of North West province aimed to improve solid waste management operations. According to Kadama (2014: 107) the challenge was that solid waste management was not sustainable in terms of environmental compliance and operational capacity. Findings in this study, reveal that transport and landfill are the only operations conducted successfully. Through this study, the solid waste management in North West has now prioritised the integration of processes to reap positive results, and they have also realised the status quo is not sustainable. Lessons learnt from these provincial structures have not been replicated in the rest of the country, despite the reported benefits.

Lucas (2016:15) reports that the Department of Justice and Constitutional Development (DJCD) has successfully implemented BPR to improve customer service. Prior to 2009 child support maintenance beneficiaries had to collect their maintenance monies physically from court. This was risky in terms of handling large sums of money on court premises and costly to customers who had to travel regularly to collect their money. The Department embarked on BPR and integrated the court system and decentralised the transfer of funds and payments are via the banking system (Lucas 2016:16).

Presently the public sector is facing mounting pressure to change its operations from traditional public sector methods to a methodology of service provision. This methodology in known as New Public Management methodology (Mansour 2017: 117). This concept requires that service delivery be based on improved customer service and cost saving. New Public Management has influenced public sector managers to encourage methods like BPR and eliminate processes that cause waste in the provision of services.

BPR implementation has faced some resistance in Higher Education Institutions due to issues of change management and culture (Sibhato and Singh 2012:2). These challenges and others, if they are not well managed, pose a serious threat to the success of institutions. Higher Education Institutions also lack BPR

implementation best practices. However, no universally accepted technique can be used when undertaking BPR.

One of the formidable challenges in implementing BPR strategies is the resistance to change which is prevalent in the South African public sector and is exacerbated by culture (Swart, 2018: 5). BPR results in change, and this study will provide a solution to some of the challenges facing public sector institutions like Universities of Technology because the characteristics are similar.

Various reasons have been put forward for undertaking BPR. On the one hand, BPR has materialised as a result of government intervention to improve operational processes in universities (Sibhato and Singh 2012:1; and Krishna, Kassaw and Prasad, 2015:1403). On the other hand, BPR has been driven at an institutional level to improve administrative operations (Adbdous, 2011:427).

2.5 BUSINESS PROCESS RE-ENGINEERING IN HIGHER EDUCATION IN SOUTH AFRICA

Mokoena and Dhurup (2016:311) note that Universities of Technology in SA face immense challenges and that their future existence depends on how they choose to respond to these challenges. While management techniques like marketing have developed and been used in Higher Education Institutions at the same level as in the private sector, BPR has not reached the same level in Higher Education Institutions as in the private sector. Against this backdrop, some Universities of Technology have embarked on improving their administrative processes by undertaking BPR, similar to the subject of this study. Hence there is a need to examine BPR's impact.

Challenges associated with IT systems have necessitated the implementation of BPR in institutions affected by mergers. Mavetera (2012:2) reports that in merged institutions, business processes were mostly mis-aligned, and some IT systems had fewer processes while others used newer technology. Mushaathoni (2015:6) investigate BPR implementation in Tshwane University of Technology (TUT). In this study BPR implementation was motivated by the desire to re-design

operational processes. The aforementioned studies make a valuable contribution to BPR implementation; however, both focused on a radical approach (institution-wide). In this study the focus is on implementation at a departmental level.

As early as 2007, the University of South Africa (UNISA) adopted BPR to improve its Integrated Learning System. This system allows the academic library to manage electronic resources and to link their processes (Snyman, 2007:1). The project is said to have used a clean slate approach, although certain modules were purchased or added into the university IT system.

The SA experience of BPR includes the National Centre for Nano-Structured Material (NCNSM) project (Mabena, 2012:4), which operates in the science and technology field and provides high tech equipment to organisations including universities. While the project was not modular or departmental, the study focused on administrative processes and not the academic sector, but nevertheless adds value to studies like the one undertaken in this project.

2.6 FACTORS INFLUENCING BUSINESS PROCESS RE-ENGINEERING IN HIGHER EDUCATION

Factors influencing institutional BPR are developments which can either be internal or external and are also known as drivers for BPR (Sorunke and Nasir, 2016:4). Influencing factors can either facilitate or inhibit undertaking BPR. In the former the role of these factors results in BPR being undertaken and implemented in institutions, while in the latter instance the effect is the opposite, and hence it is essential to discuss their role and influence. For the purpose of this study, internal factors were examined. These developments include changing technology or cultural issues which result in competition or demand for quality service (Kadama 2014: 109). For example, an increase of online learning opportunities has amplified competition for students and universities, which are forced to improve their operations to attract or retain their student intake. The rapid change in technology, globalisation and enduring cost constraints are some of the factors identified, as influencing organisations to adopt BPR (Habib and Jamal, 2016:1). The following section discusses these issues in detail.

2.6.1 CHANGING TECHNOLOGY

Technology has undergone various changes in Higher Education as observed by Ng'ambi, et al. (2016:1). They report on four phases which have affected Higher Education Institutional processes due to technological changes:

i. Phase I: This was a period between 1996 and 2000 when technology was used predominately to improve repetitive operations. Computers aided these processes.

ii. Phase II: The second phase was between 2001 and 2005. Institutions focused on building infrastructure to support IT. Another factor during this period were efforts to improve teaching through the use of technology.

iii. Phase III: The third phase happened from 2006 to 2010. Institutions began focusing more on IT and massive research initiatives were undertaken to examine possible benefits for Higher Education.

iv. Phase IV: The last phase took place between 2011 and 2016. The use of social media came to the fore. Due to advancing social media capabilities institutions sought to improve operations through this medium and to benefit students. Mobile devices also became part of the tools that universities use for disseminating learning materials.

2.6.2 GROWING GLOBALISATION

Globalisation in Higher Education involves the local presence of foreign university campuses as well as the presence of students and staff from other countries and regions (Ariail, 2016:30). In the context of this study, globalisation means receiving applications for admissions from people with non-South African credentials (matric and academic records). Internationalization is another term used to give similar description as globalization (Naidoo and Sibiya, 2018:351). This has impacted universities in more than one way and has required that operational processes be

changed. Universities have had to improve operations to cater for students who reside afar. Processes have had to operate at high speed, given the geographic divide, by employing online platforms and services. BPR helps universities in this regard, with the integration of processes and services like online verification of credentials and study permits.

The administrative departments have not been explored to the same degree as academic departments on the matter of globalisation and global practice. Maseko (2018:1316); Ramtohul (2016:119) observe an increase in global competition for students and that African universities have embarked on internationalisation purely for academic purposes, resulting in enhanced academia and unmatched administrative processes.

2.6.3 ENDURING COST CONSTRAINTS

Chiwandire and Vincent observe that student population has increased dramatically in South African Higher Education Institutions and decrease in state funding (2019:2). Staff members are faced with greater demand for services, in most cases with the same resources that were allocated to service fewer students. This has decreased the satisfaction of the university customer base, which includes students, staff and other stakeholders. Customer satisfaction is a critical non-financial indicator of organisational performance. Sohail, Daud and Rajadurai (2006:280) contend that total customer satisfaction is one of the key factors behind BPR implementation in Higher Education. Customer focus differentiates BPR from other improvement management methods like Total Quality Management (TQM) focuses on continuous improvement of processes while in BPR, the focus is on ensuring customer satisfaction through improved operations. In Higher Education customers include students and others, including internal and external stakeholders.

2.6.4 UNIVERSITY STRATEGY

Strategic management and direction refer to the process of managing long term goals of the institution. Bosire (2017: 1-2) observes that a strategy is an outcome

of strategic planning and is a combination of intended activities that the university promises to undertake to achieve its goals. From the above definition, some of the activities will fall under senior management while others belong to tactical / department section in universities. For example, senior management may decide to attract the best students in the country, and consequently, the department can implement online services or could review and eliminate some operations to ensure this goal is achieved. As a result, a university's strategy becomes an influencer in the implementation of BPR.

2.7 BUSINESS PROCESS RE-ENGINEERING SUCCESS FACTORS IN HIGHER EDUCATION

Understanding the success factors helps to eliminate BPR failure. In well-cited BPR reports, Al-Mashari and Zairi (1999:87) and Jain and Chandrasekaran (2010:78) define key success factors (also known as critical success factors) as being aspects that cause the success implementation. Successful BPR project implementation require an understanding of these factors because they serve to gauge the readiness where BPR can be implemented, apart from the general need to improve operations. Al-Mashari and Zairi (1999:87), Edoun, (2018:1), Aldiabat, Bataineh and Abu-Hamour (2018:218-220) identify the Key Success Factors discussed below.

2.7.1 VISION AND OBJECTIVES

The vision and objectives of the project should be defined in the planning phase. The project team needs to know precisely what the project seeks to achieve to avoid confusion and to eliminate unrealistic expectations. Aldiabat, Bataineh and Abu-Hamour contend that for the project to succeed it must be aligned to the overall strategy of the institution (2018:218). Higher education studies on BPR have focused on institutional wide projects and not linked to departmental priorities as this study seeks.

2.7.2 COMMUNICATION

Communication in the BPR project refers to the active dissemination of information to stakeholders, including the implementation team. Abdellatif, Farhan and Shehata (2017:10) contend that employee awareness and knowledge of BPR must be prioritised, that communication builds trust and confidence in the team. Regular meetings serve to communicate project challenges, expectations and other relevant information like budgets.

2.7.3 TOP MANAGEMENT SUPPORT

Top management support includes activities that top / senior management perform relative to the project. From the inception of the project, top management is expected to demonstrate their support for the project so that it can succeed. Subordinates must have trust and confidence that the project will not be detrimental to their positions. Communication must also be open and frequent between the team and senior management, and management support must be sustained throughout the project life cycle to ensure its success (Mohapatra *et al.* 2017:469-470). For example, BPR results in change, and management must be transparent in advising those affected how the change will be handled and address their concerns.

2.7.4 EMPOWERMENT

Empowerment refers to a situation where employees have the ability to make decisions and solve problems without relying on their seniors and hold authority to do their work (Aldiabat, Bataineh and Abu-Hamour, 2018:219); (Al-Mashari and Zairi, 1999:89). Nkomo and Marnewick contend that this factor involves employee training (2021:4) for example, after BPR implementation, administrators must have enough information at their disposal to make decisions. They must have the autonomy to carry out orders supported by IT.

2.7.5 HUMAN INVOLVEMENT

Involvement of employees at the earliest stages of the project are crucial for successful BPR implementation. The implementation team benefits from employee involvement because they can utilise their ideas and inputs to achieve their expected results (Pattanayak and Roy, 2015:475). Employees directly affected by the project should be prioritised. Their fears and concerns must be addressed for the project to succeed. AbdEllatif, Farhan and Shehata, (2017:10) contend that human involvement is equitable to culture. The belief is that it helps to address cultural issues before these become a problem, and helps improve the success of the project.

2.7.6 TRAINING

The changes that are brought about by BPR require employees to be trained in the new system. They require adequate skills to perform new tasks using the new system (Pattanayak and Roy, 2015:474). Nkomo and Marnewick, observes that training should not be provided for its own sake, but rather it should be thorough training, ensuring all are conversant with the new system (2021:4). For example, under BPR some processes are eliminated, and as a result, a new (consolidated) one emerges, and administrators require skills set to execute new processes.

2.8 BUSINESS PROCESS RE-ENGINEERING MEASUREMENT CRITERIA

Performance measurement involves making a comparison between actual and planned output. Benefit for performance measurement is borne from the need to determine success from failure and institutions can benefit from this exercise because of the strong link it has with performance management and improved organisational performance (Van Looy and Shafagatova, 2016:2). Metrics for conducting performance measurement must be aligned to the strategic direction of the organisation or department for it to add value. For example, the operation in an academic department should address strategic focus designed to add value to the entire UoT. While some models assess the entire organisation, others focus on a single process or department. Mekonnen (2019:10); Musa (2015:43) and

Kadama (2014:110) identified four metrics for measuring BPR success namely quality, service, cost and cycle time, as outlined below.

The term quality is two-dimensional as it addresses client and employees. Habib and Jamal (2016:6) refer to internal and external stakeholders. BPR implementation seeks to improve the experience of internal stakeholders by making work easier to perform and for external stakeholders, important information becomes easily available, and they are not required to physically visit an office building for assistance. Pasaribu et al, note that quality also means data integration and an improvement in communication (2021:636).

According to Kadama (2014:111) a service is evaluated in terms of functionality and unique offering. Service provision should be beneficial to the client (external stakeholder), and for internal stakeholders, this should be in terms of fewer steps required to perform work or to access service.

Implementation of BPR seeks to cut costs through the use of technology (Musa, 2015:45). Operation processes performed by individuals are automated through the use of technology; hence they become less costly to the institution by cutting back on salaries.

Cycle time refers to the period it takes to perform a task to deliver a service to the customer. Kadama (2014:112) declares BPR implementation seeks to reduce cycle time. For example, the duration of the student registration process is shortened from a whole day to less than ten minutes.

2.9 PERCEIVED BENEFIT OF IMPLEMENTING BUSINESS PROCESS RE-ENGINEERING IN HIGHER EDUCATION

In its traditional form, BPR promises to reduce the cost of production and lead time, and increase market share. Universities implement BPR for various reasons including improved performance in administration, customer satisfaction, increased productivity, coordination and competitive advantage (Mulugeta 2014:5; Krishna, Kassaw and Prasad, 2015:1403). These benefits are discussed below.

Administrative processes in Higher Education Institutions have been noted as an area of concern from the point of the view that “traditional working practices” (Mulugeta, 2014:5) do not always produce required results. This factor highlights unsatisfactory employee performance in administrative sectors in universities. BPR can address this challenge whereby standards are set to comply with expected results and also set technical factors to support desired employee output (Aldiabat, Bataineh and Abu-Hamour, 2018:220). Universities have been known to favour tried and tested methods of work which usually adhere to specialist and department specific roles. These can sometimes hamper performance.

According to Jha, Jha and O’Brien higher education sector world-wide is focused of student retention (2019:234). Universities are focused on factors that support enhanced student experience- which address customer service because students are customers in a higher education setting. Lack of real-time information negatively affects processes and customer service in Higher Education. In the case of student registration, administrators may not be able to register more students because the required information becomes available as and when it is updated, and any authorised station has access to this information. Through BPR such integration bureaucratic delays are by-passed, thereby increasing employee productivity as well as customer satisfaction.

Harb and Abazid mention some in the higher education view student admissions as a specialist job (2018:103). The Department of Academic Administration (and the university) can benefit via BPR as process design result in combination of a group of processes, this is likely to increase productivity as it eliminates some of the steps in the value chain. This ensures specialist knowledge is eliminated as well as a silo approach to administrative work.

Coordination is important in making operational processes function at the desired level. Automation of processes like student registration is achieved easily with BPR in place show that BPR is important and can facilitate both coordination and communication in Higher Education.

Competition in higher education has been brought about by globalisation and other market related factors and universities have realised they have to adopt strategies setting them apart from their competitors (Lodesso, van Niekerk, Jansen and Muller, 2018:51). Operational processes in administrative sector, similar to the ones focus of this study, can help institutions respond positively to dropping student enrolment. Khairnar (2015:52) proposed BPR as a solution to dropping student enrolment in universities. The report proposes that BPR can address the problem of reduction of student numbers by not trying to increase student enrolment but instead lowering costs and refining internal processes. This appears to contradict the essence of providing tertiary education as a public good to the nation where an institution is situated. The notion may also contribute to an incorrect perspective on how to apply BPR, particularly in higher education.

2.10 HIGHER EDUCATION CHALLENGES

Studies have revealed challenges with implementation of strategic programmes in universities (Bosire,2017:2). The perception is that universities succeed in formulating strategic programmes like BPR but do not always succeed in realising the desired results. For example, the team can identify process bottlenecks as required in the BPR process, and also succeed in formulating expected results, only to find that when implementing they either fail to meet deadlines or suffer budget constraints and end up not achieving the desired outcome.

HEI organisational structure is known to be hierarchical and this informs the culture in universities (Chetty and Pather, 2015:2). The prevalent organisational structure guides the roles of administrators, whereby junior positions rely on the seniors for guidance and approval. Administrative departments and faculties operate as units with similar reporting lines. This situation sometimes leads to prolonged decision making and duplication of processes. BPR, on the other hand, proposes a flat structure for higher education institutions where information sharing is limitless.

The high cost of re-engineering can hinder plans to initiate BPR. Making decisions that require substantial finances can be tricky in higher education institutions. An

organisation may assess their problem and realise that BPR is the only solution, however public sector organisations like universities may encounter challenges to secure funds for BPR. This will result in more problems as they may not have the capacity to implement a solution.

Lack of commonly accepted characteristics of BPR poses a real challenge when organisations undertake BPR. Bhaskar and Singh (2014:25) report on existing confusion about the characteristics of BPR. This is partly because different definitions place different emphases on BPR aspects. A situation may arise whereby an organisation undertakes a project which may not particularly satisfy all BPR characteristics, and this can lead to high failure rate, which then unfairly undermines the reputation of the process. Nkomo and Marnewick underscore the importance of correctly defining BPR when undertaking the project for it to succeed (2021:3). It is therefore essential to ascertain whether a project has all the BPR features. Understanding BPR is important to avoid costly mistakes as a result of organisations allocating big budgets to an unusable. BPR shares similar features with other management techniques like Total Quality Management, but the two are not the same (Al-Mashari and Zairi, 2000:13). Similarities include focus on customer satisfaction, cultural change and process review. However, the two techniques are different in the following aspects: BPR is a once-off project involving multiple functions in the organisation and involves greater use of IT, while Total Quality Management projects are continuous in nature concentrating on narrow department processes.

In some sectors BPR is viewed as a management fad, a populist term not to be taken seriously because fads wane as do their popularity (Dell'Aquila, 2017:29). This misunderstanding of BPR can create a lack of interest in a project as some senior manager may view it sceptically. Managers may feel less obliged to a BPR project as they think it will disappear as its popularity declines. Another misconception is that BPR as a system is used to lay-off staff. Mavetera (2012:18) notes that in higher education some believe BPR to be a tool for automation which it is not.

Transformation priorities in South African universities is a phenomenon with different connotations for different people. A general view exists that in response to the past imbalances, the sector needs reconstruction – institutional culture, management, governance and infrastructure are some of the aspects that must be attended to for transformation to take place (Mokoena and Dhurup, 2016:312-313).

However, another view is that South African universities must be comparable to international standards whereby research output determines productivity and the holding of a PhD by staff is a prerequisite for appointment as teaching staff (Govinder, Zondo and Makgoba, 2014:2). These views might appear to set this sector back, with the resources that are received every year there will be a tug of war between the projects that must be prioritised. There may be a number of aspects that require financing, with limited funds. It is therefore important to prioritise improving administrative capabilities if universities plan to improve their competitive edge.

Harb and Abazid highlight a lack of guidance as Higher Education Institutions have not learnt from their private sector counterparts on originating a process design to implement BPR and this is threatening the success of BPR (2018:101). Research shows different approaches to BPR methodology generally and BPR in Higher Education Institutions in particular. This lack of common methodology can present a set of challenges in that there is no experience-based-knowledge that can be compared when implementing BPR, and the lack of accepted standard procedures are disruptive to planning and the ability to evaluate implementation.

2.11 BUSINESS PROCESS RE-ENGINEERING METHODOLOGY

An examination of BPR methodology was an integral part of this research study as it provided a perspective on the methodologies, techniques and tools currently being employed when implementing BPR in a Higher Education Institution. Nkomo and Marnewick (2021:3) and Dell'Aquila (2017:27) describe BPR methodology as a systematic way to implement BPR. It involves a clearly defined sequence of steps that must be followed when implementing it in response to a specific challenge.

Research reveals that BPR implementation methods in Higher Education have been overlooked (Basri and Siam, 2017:155). Despite the increasing number of BPR projects there is no documented system to consult and verify for guidance. Hence BPR projects run the risk of failure or falling short of expected results. An examination of BPR methodology is important in Higher Education, so that those involved will know what is expected of them. BPR projects rely on well executed methodology and tools to be successful.

- Generic Methodology

Early proponents of BPR proposed a six-step implementation method. Bhaskar also recommends this methodology referring to it a framework for success project (2018:536). No research has been done to propose the same for higher education implementation, it exists as a generic model consisting of the steps as outlined in the section below.

The introduction step involves communication of the case for action. The team introduces the BPR business problem and current situation in the organisation. This step also involves a vision statement.

The second step involves identification of business processes and how these processes interact as well as external interactions. These are high-level processes.

Processes that are most problematic are identified for re-engineering at this stage. These processes are chosen on the basis that they contribute significantly to the organisation's objectives. Chosen processes must also present the possibility of being reengineered.

The fourth step involves an in-depth understanding of the selected business processes. The team documents detailed analysis to ensure that the selected processes fall within the project scope. This will help with the design of new processes.

The selected business processes are designed to facilitate new work. The re-engineering team generates new ideas to address the identified operational deficiencies.

The implementation phase is the last step in this methodology. It is based on the premise that the five previous steps have been properly conducted.

The generic methodology does not incorporate steps like planning and testing. These have proved to be essential over time because teams have become aware that they require time to plan and test before implementation.

- Higher Education Methodology

Abdous (2011:428-430) proposes a four-step business process re-engineering methodology for Higher Education, the same method is supported by Pasaribu, Anggadwita, Hendayani, Kotjoprayudi and Apiani (2021:625-626). The methodology has sub-processes, discussed below.

The initiation stage of BPR involves raising awareness of the need for BPR. The initiation stage results in the appointment of the BPR team and identification of stakeholders. Project plan, targets and vision of the project are set as well as the project leader selected.

The second stage involves analysis of student requirements. The team also assesses organisational issues and identifies improvement activities. Some steps in student registration can be automated to make registration easier and less costly to students and the university. In the analysis phase, the team decides whether to adopt a radical or incremental approach (discussed in detail in section 2.3.2). When adopting an incremental approach, the improvement is sought by making changes to some of the steps in the operation process. In contrast, in a radical approach everything is discarded and new procedures are implemented.

In third stage, re-engineering the focus is redesigning information systems that supports the targeted process as well as redesigning the human performance of users and process owners. The redesign process must address cost, speed and quality. For example, the team must ensure student registration is less costly to both the student and the institution meaning that it should take less time and resources compared to the previous method. The improvement must add value to student expectations, and the designed process must be better. The outcome from this phase includes combining several jobs into one, employee empowerment and a bigger role for technology.

The implementation phase is the last stage, and includes piloting the re-engineered process in a test system. The implementation team is heavily involved at this stage as they must examine feedback from the pilot project. For example, pilot test results must indicate whether the designed process addresses the identified problem. The team must receive and address concerns regarding the designed process, and they must ensure that users are properly trained to utilise the new system.

2.12 BUSINESS PROCESS RE-ENGINEERING TOOLS

Tools are techniques used in the BPR implementation process. Specific tools can be used in each phase of the process. There is not a universally accepted set of tools as suitable specifically for Higher Education Institution in BPR implementation (Bhaskar and Singh, 2014:27). However, the best tools in general are explained below.

- Benchmarking

Benchmarking is a process of comparing operational processes or services with those of other institutions or competitors to identify best practice for providing a service or conducting an operation (Habib and Jamal, 2016:6). Institutions embark on benchmarking to learn and compare their operations with those of the leading institutions or their competitors. It is most useful in the early stages of BPR planning as it helps identify gaps and areas of possible improvement. The current study

investigated the level of benchmarking conducted before or during BPR implementation.

- Change Management

Change management in BPR projects refers to the ability to manage change and address cultural issues in employees (Nkomo, 2021:4). A project is bound to fail if the BPR team does not prepare employees for the imminent changes. BPR affects employee positions and their work environments. It is crucial for that reason that changes are done transparently and in an orderly fashion. Communication is a vital change management tool.

- Simulation

Simulation involves analysing digital models to predict operational performance (AbdEllatif, Farhan and Shehata, 2017:12). This tool uses graphical displays showing how processes flow and how they can be manipulated to show alternative scenarios. Using simulation models allows BPR planners to experience desired results before the project is implemented. Lack of a software package to incorporate simulation tools into BPR limit full visualisation of processes. Simulation is suitable for use in the testing stage and can be manipulated throughout BPR implementation.

- Process Visualisation and Mapping

Process visualisation refers to the creation of the vision for the project. The team must develop a vision of the outcome of undertaking BPR (Bhaskar and Singh, 2014:27). This vision forms the basis of the desired improvement and it guides the planning going forward.

- Project Management Techniques

In their well-cited report Al-Mashari and Zairi (1999:33) indicate project management skills are suitable tools for BPR implementation. Through this tool the team can plan the sequence of activities, set time frames as well as important

targets. Project management skills are relevant especially for monitoring and reporting purposes.

2.13 APPROACHES TO BUSINESS PROCESS RE-ENGINEERING

BPR implementation is a major undertaking in terms of costs and resources, and it seeks to achieve high performance. High performance relies in the areas of cost, speed and quality to the benefit of students (customers). Two factors distinguish the type of approach to be adopted, i.e. level of change and the scope of change.

2.13.1 Level of Change

Under level of change two approaches have emerged regarding BPR implementation. According to Abdous (2011:428), BPR should be radical to achieve drastic change in cost, speed and quality. This is known as the traditional approach to BPR. The other approach advocates an incremental or modular approach whereby BPR is implemented on an incremental scale. This is known as second generation BPR.

The radical approach to BPR requires that the whole institutional processes be changed, including culture and organisation structure (Edoun, Fotso and Mbohwa, 2018:2). This approach proposes that for BPR to be successful it must be implemented across the whole organisation on a clean slate as if nothing existed before, hence the term ‘radical approach’. This approach is associated with increased costs and high risk.

The incremental approach has emerged as another method for implementing BPR and promotes an incremental and modest implementation approach (Sturdy 2010:5). According to this approach, only the identified processes require to be modified and not the whole institution. Accordingly, it promotes taking into consideration of the status quo and ensuring maximum benefit from the system. Implementation takes place on a modular basis with minimum disruption. The incremental change approach is associated with less disruption as it may involve

only one department with one “individual process” (Bhaskar and Singh, 2014:27). This kind of re-engineering is also known as horizontal re-engineering since it does not involve the whole organisation but it is implemented to address particular challenges in one section of the organisation (Bhaskar and Singh, 2014:34).

2.13.2 Scope of Implementation

The scope of implementation deals with two approaches – quality and IT.

i. Quality Approach

The quality approach concentrates on value chain analysis (Balaji 2004:2) and uses value analysis examining the whole process to determine core and support activities. The main aim of this examination is to identify processes that add value and those that can be eliminated, combined or outsourced. Value analysis provides the BPR team with an opportunity to identify core activities and respective weaknesses in those activities (Harb and Abazid, 2018:100). Before undertaking BPR projects, departments or institutions must conduct a benchmarking exercise to establish their position in terms of service levels. This process assists in identifying existing gaps within the institution (department) and therefore guides the direction of improvement. Benchmarking is an important component in the BPR quality approach, but a challenge can occur when benchmarking processes of well-resourced Higher Education Institutions against those with lesser capacity.

ii. Information Technology Approach

The IT approach views BPR as an IT intervention to improve processes. This method essentially includes taking advantage of IT capabilities and improving processes through computer technology. Makokha, Ujunju and Wapekhulu (2014:91) note the challenge in universities of introducing new systems which follow old practices. This challenge further confuses BPR and can equate it to automation whereas BPR involves organisational reform of all its processes.

2.14 IMPLEMENTATION CHALLENGES

It has been estimated that approximately 70% of BPR projects fail (Mekonnen 2011:13) as a result implementation challenges, despite the popularity of BPR as a solution to many challenges faced by institutions. The size of the organisation is not a factor in the success or failure of BPR implementation. Mekonnen (2011:14) and Mushaathoni (2015:39) identified the following factors challenging BPR implementation.

i. Misunderstanding of the concept of BPR directly contributes to the failure of a project. There are management concepts that look and feel similar to BPR. Cases have been reported where management adopted non-BPR projects due to misunderstanding what BPR is. Causes of misunderstanding include the belief that BPR is intuitive or can be implemented without considering other aspects of the organisation instead of understanding that it is an engineering discipline that requires the involvement of the whole institution (Shuleski and Cristea, 2014:500).

ii. Misapplication of BPR can occur as a result of overreliance on IT. Re-engineering requires a change of thinking based on process changes and not to just continue following old procedures simply because they have been automated. Mis-application can also occur when BPR is applied with the expectation of results not aligned to BPR.

iii. Management failure to change occurs when management fails to adapt to a new environment. BPR requires empowerment of individuals to take decisions without relying heavily on their line managers. Musse (2015:20) mentions that management is required to provide necessary support for BPR to be implemented successfully.

iv. Lack of proper strategy occurs when unrealistic goals are set for a BPR project. While BPR seeks to achieve dramatic results in reduction of cost and production as well as improved quality, goals must be set such that they

are aligned with the resources of the institution and its status. Goals not aligned to the strategic area are not likely to contribute to success.

v. The human element has been discussed extensively under different themes including culture and change management. This underscores the importance of the failure to recognise the importance of people when implementing BPR, which is bound to have negative results.

2.15 SUMMARY

This chapter provided an analysis of theories and approaches that underpin BPR in higher education. Firstly, it was revealed that BPR has occurred across various sections of the public sector in South Africa, including government departments, municipalities and universities. Previous Higher Education Institutions cases of BPR (referred to in section 2.3) followed the clean slate approach. This highlights the lack of literature on South African BPR projects at departmental level in higher educational institutions.

The literature presents an abundance of information on key success factors, implementation methodologies and factors influencing BPR in higher education. Three factors were discussed due to their immediate influence on operations in the Department of Academic Administration. Implementation methodology revealed that most projects adopt the clean slate method. Influencing factors, as per discussion above, relate to matters that influence institutions to either decide to implement BPR or not. Measurement criteria revealed issues that must be attended to, when assessing the success of the project. The success of BPR projects relies on attending to implementation challenges.

Chapter 3 presents the research methodology for the study

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter addresses the research process employed in this study; this study focuses on the quantitative research methodology. The chapter includes the research design, population, data collection and data analysis. This study gathered information regarding the impact of BPR implementation in the Department of Academic Administration in a UoT in South Africa. A questionnaire for data gathering was developed and administered to 60 members of staff at the chosen UoT.

3.2 RESEARCH DESIGN

Research design is a master plan which elaborates on the methods used to collect and analyse data created to addresses the research questions which, in the current research, is to investigate the impact of BPR implementation in the Department of Academic Administration in a UoT (Sekeran and Bougie*,* 2016: 95-96; Reio, 2016: 679). The researcher connected the research problem to the relevant research through collection of primary data using a questionnaire, and secondary data via academic journals, books and internet sources (literature review).

The population consisted of 110 employees, with a sample size of 60 respondents. A survey methodology was used which is a convenient method of collecting data from a large number of participants within a set time-frame. According to Sekeran and Bougie, (2016:97), a survey data collection method allows the researcher to collect quantitative information easily. In this study, structured questionnaires were distributed to selected staff members in pre-determined departments in the UoT.

This study used explorative and descriptive approach. The design was appropriate for this study as it provided respondents an opportunity to explain their experiences on the impact of BPR implementation in the Department of Academic Administration in the university. Mutshatshi, Mothiba, Mamogobo and Mbombi assert that questionnaires are suitable for collecting data from a large population as was the case in this study (2018:2).

3.3 POPULATION AND SAMPLE

According to Espinosa and Ortinau (2016:3149), a study population refers to the entire set of people that is of interest to the research. In the university of interest in this study the target population was 110 employees. These employees were spread across the institution and affiliated to departments whose operations were linked to those of the Department of Academic Administration. These employees and their respective departments were affected by the change initiatives that were investigated in this study. A segment of the population referred to as a sample is a group of units carefully selected from the population to represent all elements found in the population (Rahi, 2017:3). The sample size in this study was 60 employees spread across the academic and administrative sectors.

3.4 POPULATION PARAMETERS

The population parameters for this study was based on those employees who serve in departments closely linked to processes in the Department of Academic Administration. According to Du Plooy-Cilliers, Davis and Bezuidenhout (2014:133), population parameters are those characteristics shared by all units in the population, which makes them relevant for answering the research question. In this research the main process was student registration, thus selected participants were identified as staff in operations that involved the registration of students.

3.5 SAMPLING FRAME AND DESIGN

The sampling approach adopted for this study was identical sampling which can be described as a method where quantitative samples include the same participants (Wium and Louw, 2018:7). Qualitative and quantitative data collection was conducted in all the participating departments. This design was selected based on its suitability, with both types of data solicited simultaneously.

3.6 SAMPLING METHOD AND SAMPLE SIZE

The sampling method is determined by practical issues and the nature of the research study. Rahi (2017:3) identifies two types of sampling methods: probability and non-probability sampling. In probability sampling all units have an equal chance of being selected and included in the sample while in non-probability sampling, which was used in this study, the chance of inclusion in the sample is not known. Probability sampling has respective sub-categories; however, these will not be discussed as they fall outside the scope of this study.

Sekeran and Bougie, (2018:347-348) identified four types of non-probability sampling methods: convenience, purposive, quota and judgement sampling. The convenience sampling method, which was used in this study, refers to information collection from respondents who are conveniently available. This method was chosen because the researcher was able to recruit those who were close at hand to participate, and the method was cost effective particularly in terms of time. Purposive sampling refers to sampling confined to specific groups of respondents who may fit the criteria set by the researcher. Quota sampling occurs when certain groups are represented in the sample. Judgement sampling involves selecting subjects best placed to possess information about the research problem.

Selection of the correct sample size is important in scientific research as it contributes to answering research questions. According to Sekeran and Bougie (2016:264) a sample size larger than 30 and less than 500 is appropriate. In sections 3.2 and 3.21 above it was reported that population was 110 employees, and the sample size was 60 respondents. According to Du Plooy-Cilliers, Davis and Bezuidenhout (2014:134). The number of elements to be included in the sample is determined by the research method used; a quantitative method demands a larger number compared to a qualitative method.

3.7 DATA ANALYSIS

Data analysis involves presenting a detailed description of responses received. This process involves classification and analysis of responses to make meaning (Sekeran and Bougie, 2016:273). Responses were examined and tabulated.

Statistical package for social sciences (SPSS) version 23 was used to analyse quantitative data, then presented in tables and graphs. Ratio scales were used to measure and compare responses, allowing absolute comparison to be made on the responses given by respondents to each question (Ndjamba and Munangatire, 2021:3).

Statistical analysis serves to summarise and interpret data. In this study two statistical analysis techniques were used: descriptive and inferential analysis (Sekeran, et. al, 2016:278-301). Both explained in the section below

Descriptive statistics refers to the method of using graphs and percentages to present data.

Inferential statistics refers to the method used to make generalisations from the tests and analysis of variance. In this study the inferential statistical tests used included factor analysis and Cronbach's Alpha.

3.7.1 DATA INTERPRETATION

Data interpretation involves analysis of responses, for making recommendations.

3.7.2 Interpretation Of Quantitative Data

Closed questions have pre-determined answers and this facilitates coding of responses. Responses with two options are coded as 1 for first response and 2 for second response, those with three options are coded similarly up to number 3. Ortinau, Rush and Ortinau, (2006:485) advises that it is important to establish codes before collecting data.

3.7.3 Interpretation Of Qualitative Data

In this study a quantitative method of data collection was used and one question was open ended. These questions posed a challenge to the coding process because respondents provided different answers to the questions, therefore it cannot factor all possible responses that can be received from respondents. A four-step process (Ortinau, Rush and Ortinau, 2006:485) was used to create codes for responses to open ended questions:

1. The researcher drew up a list of possible responses and assigned each response a code.
2. Similar responses were grouped. These could either be positive / affirmative responses or those that give negative response to the question asked.
3. Positive responses were assigned 10 while negative responses were assigned 01, mixed responses were assigned 09, and blank or missing data were assigned 08.
4. The last step involved actual assigning the aforementioned codes to responses received from participants.

Questionnaires were coded using a three-digit code as they were received. Thus, the first questionnaire was coded 001 and the second one 002, continuing onwards until the last one received.

3.7.4 DATA COLLECTION

Data collection is a systematic method with which information is collected by the researcher (Creswell and Clark 2018:173). Data can be classified into two categories: primary data and secondary data. Primary data was collected by the researcher through self-administered questionnaires. Secondary data was obtained via a literature review, in Chapter 2 and the main aim was to understand BPR in higher education in providing answers to the research question.

A cover letter accompanied the questionnaire and participants were requested to complete and return the form not later than two weeks hence. A questionnaire-

based form of data collection is known to be less expensive and is not a time-consuming tool compared to other data collection tools like interviews and observing people (Sekeran and Bougie, 2016:143). Questionnaires can be administered through the mail, electronically or personally. Personal delivery was used for this study to encourage a high response rate and for clarification in case of possible doubts.

Creswell and Clark (2018:73) report that questionnaires are suitable tools for collecting reliable and credible data. The researcher designed the questionnaire in simple language so that it could be understood. All data was collected through the questionnaire. The respondents were assured that their responses would be used solely for the purpose of this study in line with the research ethics and protocols of the Durban University of Technology.

3.7.5 Reliability

Reliability is related to the credibility of a study (Du Plooy-Cilliers, Davis and Bezuidenhout 2014:254), and is linked to the findings of the research. Reliability can be seen as the degree to which a measurement instrument gives the same results each time that it is used. It is important to note that for a research instrument to be reliable it does not have to be accurate but rather that it must be predictable and provide the same results every time. In this quantitative method study trustworthiness and the degree to which the results can be generalised was ensured by pre-testing in a pilot study.

3.7.6 Validity

Validity is the degree to which the research questionnaire probes for information that is relevant in solving the research question. Validity has to do with the concept that if a similar question was asked differently the same answer would be received from respondents. According to Surucu and Maslakci validity in quantitative studies obtaining data that is appropriate for the intended use (2020:2695).

3.8 QUESTIONNAIRE DESIGN

The questionnaire was designed to be concise and focused on the area of BPR in a higher education institution. Research objectives informed the design of the questionnaire and each section sought to solicit information that addressed the research questions. For example, Section B concentrated on an examination of employee's awareness of the broad principles of BPR implementation in the higher education institution under study, which was the first objective of this research.

Information from the literature review was used to gain a greater understanding of BPR in higher education to inform the questions on the questionnaire. Data analysis were considered in the design phase of the research instrument, considering the nature of the data to be solicited from participants.

A single questionnaire was prepared which was administered to all sections and departments in the UoT. It consisted of closed and one open-ended questions. Sekeran and Bougie (2016:146) states that closed-ended questions are efficient because of ease of analysis.

Closed questions require participants to select their preferred answer/s from a list provided after the question. A Likert-type rating scale was used with the following categories: some questions in section B, yes/no and some questions in section E disagree/agree/to some extent and high/low/none.

Open-ended questions allow respondents to formulate their own answers, thereby providing deeper insight into the issues (Zohrabi, 2013:255). Data reduction method was used to code responses to open-ended questions. This involved categorizing and coding data (Sekeran and Bougie, 2016:333).

Questionnaires were accompanied with documents which provided the background to the study, namely, Letter of Information (Appendix A), Gate Keeper Letter (Appendix B) and Consent Letter (Appendix C). The information letter contained the title of the study, contact details of both researcher and supervisor, the study's purpose, procedures involved in completing the questionnaire,

confirmation of the voluntary nature of the study, and benefit of completing questionnaire. The gatekeeper letter confirmed that the researcher had permission to conduct the study and collect information in the target. The consent letter gave assurance to respondents that they could withdraw at any time from the study should they feel discomfort in the process of completing the questionnaire. The questionnaire was critical in providing information on the impact of the evaluation of BPR in the Department of Academic Administration in the UoT in the study. The above documents were provided to ensure that ethical procedures were followed in the process of collecting data.

3.8.1 ADMINISTRATION OF THE QUESTIONNAIRE

Questionnaires were hand delivered and sent via e-mail to participants for self-administering. The reason both methods were used was that some participants indicated that it was easier responding on hard copies than e-mailed questionnaires. Using both methods sought to increase participation and response rate. Participants were given at least two days to complete and return the questionnaire.

3.9 PILOT STUDY RESULTS

A pilot study was conducted on 10% of the study population. Respondents for the pilot study were spread across departments in the UoT. The first draft of the questionnaire was presented to a target group of six staff members. Respondents raised concerns about length of questions and that most of them were open ended questions and required more time to respond to. Feedback revealed that some of the questions were not fully understood, because some questions were left un-answered or in some cases irrelevant information were supplied. Each of the concerns raised were attended to and all the questions were reviewed and changes were made as needed. The changes resulted in concise and clear questions. Respondents who were part of the pilot study were excluded in the final study.

3.10 SUMMARY

This chapter outlined the methodology used in this study. A quantitative method was used. Survey data collection method was employed whereby a questionnaire was used as a collection tool. The questionnaire used both closed and open-ended questions to collect both quantitative and qualitative data. A pilot study was conducted to ensure reliability and validity of the collected data. In line with research ethics the privacy, anonymity and confidentiality of respondents were maintained during the administration of the questionnaire and handling of the data collected.

Chapter 4 analyses and interprets the findings.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 INTRODUCTION

This chapter discusses the findings of this study. The main aim of this study was to provide answers to the research questions by analysing the implementation of BPR in the Department of Academic Administration at a UoT.

A questionnaire was the primary tool of collecting data and was distributed to both academic and support (administration) staff members. The target population of the research comprised 60 respondents excluding 6 pilot study respondents. Secondary data was collected through a literature review. Sources in the literature review included academic journal articles and books. Data collected was analysed using Statistical Package for Social Sciences version 23.

The chapter presents demographic details of respondents, respondents' awareness of the broad principles of BPR implementation in the Higher Education Institution under study, perceptions of impact of BPR on respondents' daily work routines and an overview of respondents' perception of the success of BPR process.

4.2 QUESTIONNAIRE RELIABILITY

Prior to the analysis of data, the reliability test was conducted to assess the reliability of the scales that were used to measure the impact of BPR implementation in the Department of Academic Administration. Measuring reliability is important as it allows the researcher to assess the replicability of an instrument (Sekeran and Bougie, 2016:20).

To assess the reliability of the research instrument, the Cronbach's Alpha of the scales in the instrument need to be tested to determine their internal consistencies.

A reliability coefficient below 0.60 is considered as statistically unacceptable (Sekeran and Bougie, 2016:292). The test focused of all thirteen scales on implementation and five on the level of investment in each of the areas.

Table 4.1 Internal reliability of scales

	Section	Number of Items	Cronbach's Alpha
E17	Implementation	13	0,759
E18	Level of investment	5	0,821

The table above shows the implementation items had an acceptable alpha level of (0.75), and investment levels had Alpha level (0.82). The reliability scores exceed the recommended Cronbach's Alpha value of 0.70 (Green and Adekanmbi, 2015:115). This signifies a degree acceptable, consistent scoring for these sections of the research instrument.

4.3 QUESTIONNAIRE VALIDITY

According to Sekeran and Bougie define questionnaire validity as ability of the tool to measure that it was designed to measure (2016:220). Questionnaire had strong validity as it was seen to measure the objectives of the study. Structure and content of the questionnaire emerged from literature within the field of study. Validity of the questionnaire was enhanced through pilot testing. Unclear questions were re-phrased as per pilot testing feedback, some questions were re-aligned to the objectives and aims of the study.

Table 4.2 Factor analysis

Rotated Component Matrix[a]

Component	1	2
Employees were not sure the system would deliver on expected results	0,512	-0,046
There were disruptions of processes during implementation	0,619	-0,019
The institution's goals were considered when processes were designed	0,508	0,149
Departments are now able to rapidly respond to problems	0,866	0,248
New processes facilitate our work	0,760	-0,054
Front line employees are empowered to make decisions through new system	0,533	0,419
Information sharing has improved	0,754	-0,073
New processes facilitate openness on decision making	0,536	0,284
External consultants were heavily involved in this project	0,505	0,230

Were you afforded the opportunity to review the system before it was fully implemented	0,617	0,122
Training of employees to use new system	-0,005	0,834
IT software / system	0,117	0,744
Consultants	0,251	0,782
Benchmarking and related tours	-0,026	0,865
Reorganizing of office space	0,026	0,691

Factors on BPR implementation loaded along two components. Trends were identified within the section, as per participants' responses to all implementation questions. Results confirmed factor analysis. Yellow and green color show how respondents responded in similar ways to the two components / themes: perceptions on expected results, disruptions during implementation, employee empowerment (E17.1-E17.3), as well as perceptions on information sharing consultants and office space (E17.9-E17.13).

4.4 RESPONDENTS' DEMOGRAPHIC INFORMATION (QUESTION 1)

Both academic and support (administrative) staff members employed in the University were part of this study. This section of the questionnaire included three items, namely: gender, employment sector and period employed. Factors were selected with the understanding that they would provide insight into how different groups respond to change and this provided explanatory value to the study. Figure 4.4.1 represents responses received from respondents.

Figure 4.1 Respondents' demographic information

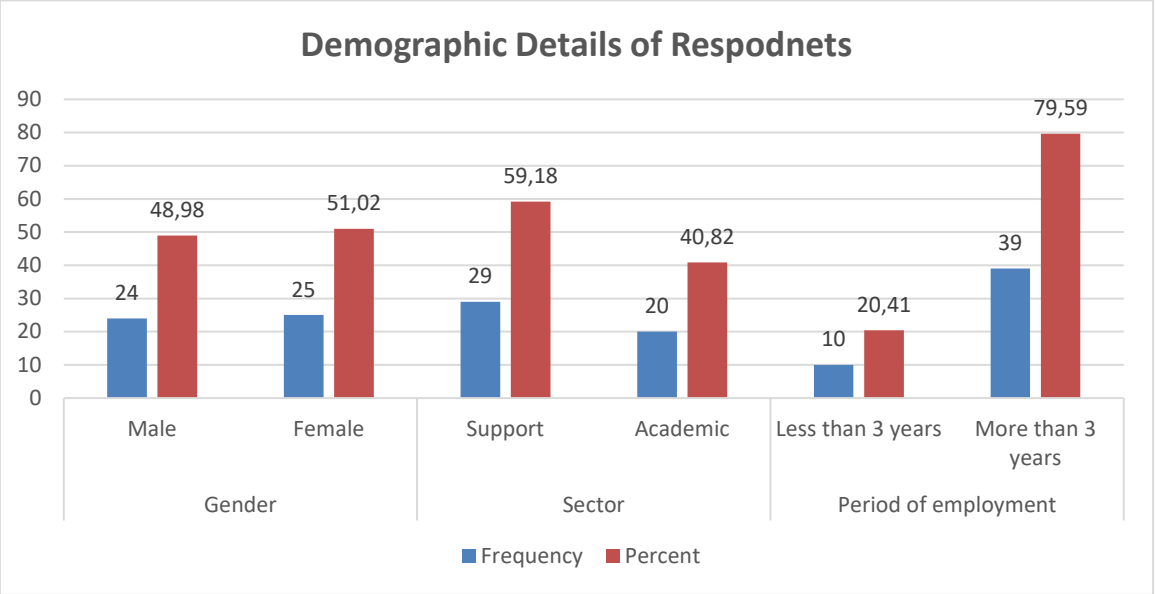


Figure 4.4.1 represents a summary of data received per gender, sector and period of employment. Results show that 25 (51,02%) respondents were females and 24 48,98%) were males. This represents balanced gender. Sector employment shows that 29 (59,18%) fall under support sector while 20 (40,82%) fall under academic sector. More support staff participated in the study. There is also an indication that 39 (79,59%) respondents have been in the institution more than 3 years while 10 (20,41%) have less than 3 years of employment period in the institution. This reveals respondents' familiarity with operational processes being studied.

4.5 EMPLOYEES' AWARENESS OF THE BROAD PRINCIPLES OF BUSINESS PROCESS RE-ENGINEERING IMPLEMENTATION

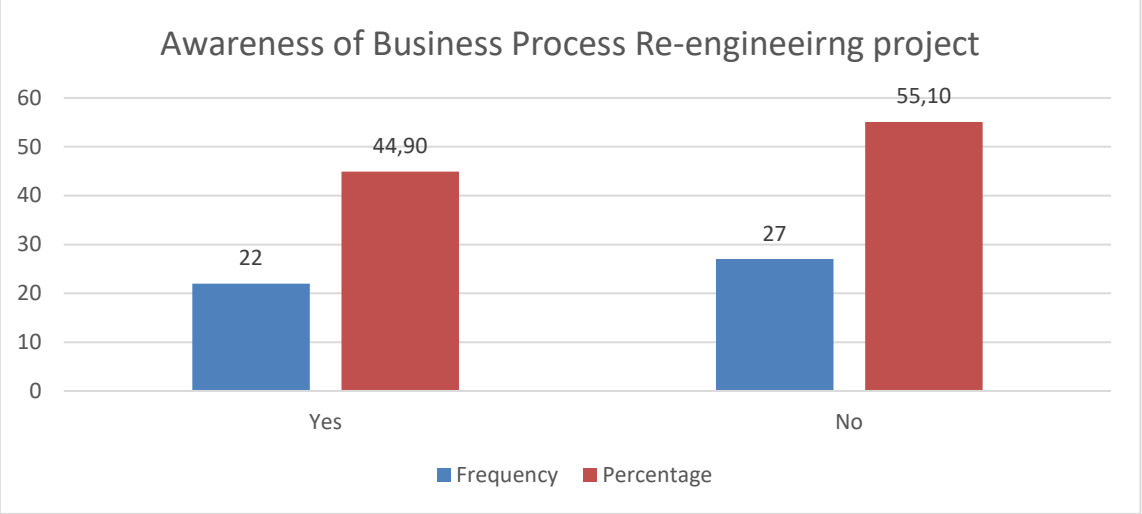
One of the objectives of this study, was to examine employee awareness of the broad principles of BPR in the higher education institution of the study. This section presents the findings.

4.5.1 AWARENESS OF BUSINESS PROCESS RE-ENGINEERING IMPLEMENTATION PROJECT (QUESTION 2)

Respondents were asked to indicate their awareness of the BPR project in the higher education institution. Figure 4.2 present the responses regarding

awareness of BPR being implemented in the higher education institution in the study.

Figure 4.2



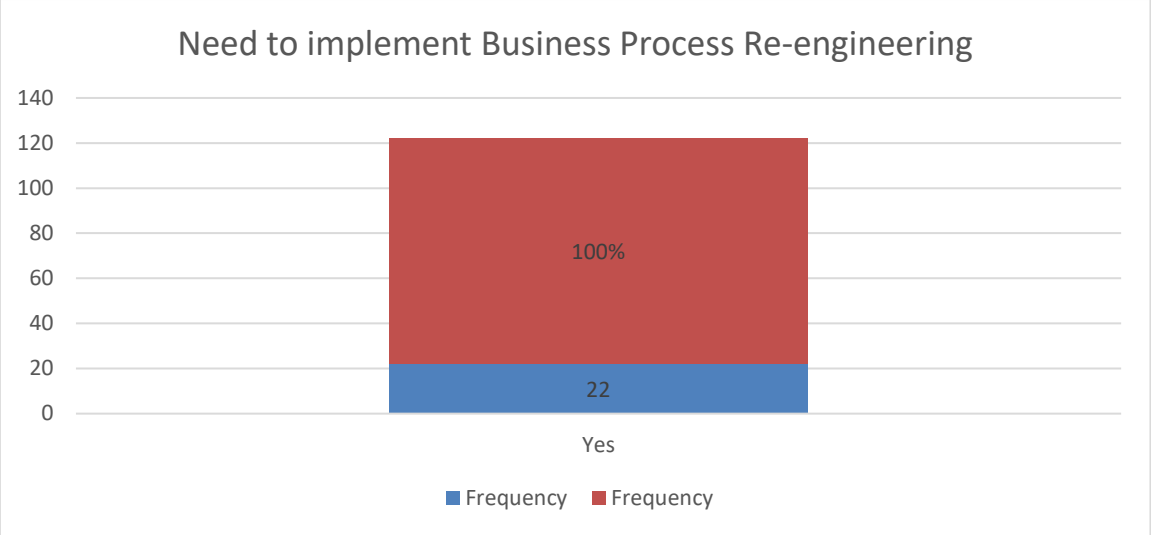
Results in figure 4.2 show that 22 (44.90%) respondents were aware of the project being undertaken. The majority 27 respondents (55.1%) indicated that they were not aware of the project. According to Igwe, Hack-Polay, Mendy, Fuller and Lock; and Al-Mashari and Zairi employees' open and active involvement is part of the consultation process in a BPR project (2021:1635 and 1999:89). Habib (2013:1) also argue that the workforce must be taken on board and properly informed about the change so that the BPR project can be a success. These findings underscore potential resistance in this project emanating from the 55.1% of respondents who indicated they were not aware of BPR project in the Department of Academic Administration. There was insufficient consultation in terms of BPR awareness creation.

4.5.2 THE NEED TO IMPLEMENT BUSINESS PROCESS RE-ENGINEERING (QUESTION 2)

Identification of the need to implement BPR by an employee is an important indicator, so they understand the current practice and operational challenges affecting the Department of Administration. Respondents who responded 'Yes' to the previous question (Figure 4.3) were further requested to indicate if there was

a need for BPR. All 22 of the participants said yes, which is a 100% agreement from the participant responses.

Figure 4.3: Need to implement Business Process Re-engineering

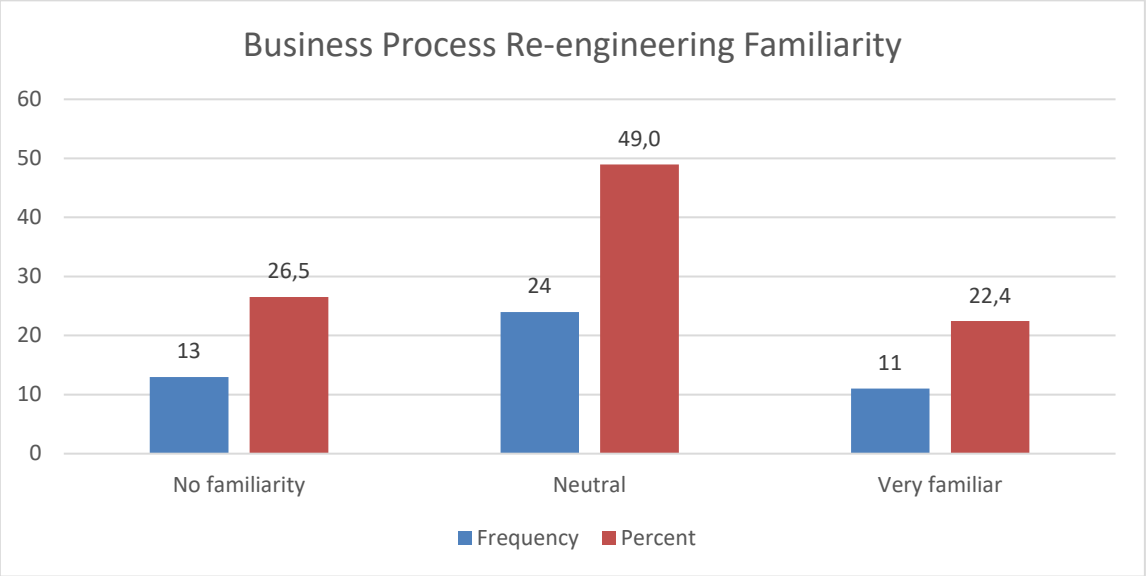


This result demonstrates championship of the BPR team (Al-Mashari and Zairi, 1999:91). The findings provide an important answer to the research question about respondents' awareness. These findings possibly indicate that respondents embraced the resultant change as they were aware of the project.

4.5.3 FAMILIARITY WITH THE TERM 'BUSINESS PROCESS RE-ENGINEERING' (QUESTION 3)

Pasaribu, Anggadwita, Hendayani, Kotjoprayudi and Apiani indicate that BPR is a foreign term in higher education (2021:623). It was therefore important to assess its familiarity to ensure the concept was not confused with others like Total Quality Management. Both of the improvement approaches focus on performance. Respondents were given three categories of options to indicate their familiarity: no familiarity, neutral and very familiar. 'No familiarity' meant the respondent had no knowledge about the term 'BPR', neutral indicated some level of knowledge while very familiar showed expert knowledge. Findings are presented in figure 4.4

Figure 4.4: Familiarity with the term



BPR skill requirements cannot be overemphasised because these skills are necessary in BPR implementation (Al-Mashari, Irani and Zairi 2001:445). The findings indicate that 11 (22,40%) respondents possess expert knowledge about the term, while 13 (26,50%) indicated to have no knowledge of this term. 24 (49,0%) respondents indicated to have some knowledge of the term.

According to these findings most respondents possess knowledge and awareness of BPR. This confirms the assertion by Lucas (2016:13) that BPR is widely known in the public sector as an approach to improve operations. The findings regarding their familiarity with the term 'BPR' means that respondents were able to add value in planning and implementation sessions, as they were aware of BPR. This further show that respondents could organise around outcomes, as a principle of BPR that they understand, and this reduces the risk of mis-understanding during implementation phrase.

4.5.4 EVIDENCE OF INFORMATION BEING COLLECTED TO UNDERSTAND THE SHORTCOMINGS OF THE OLD SYSTEM (QUESTION 10)

One of the broad principles of BPR is targeting processes that must be prioritised for re-engineering. In answering the research objective on employee awareness, respondents were asked if they witnessed information being collected by the BPR

team, to understand the shortcomings of the old system to have accurate information which operational processes target (Figure 4.5).

Figure 4.5: Evidence of information being collected

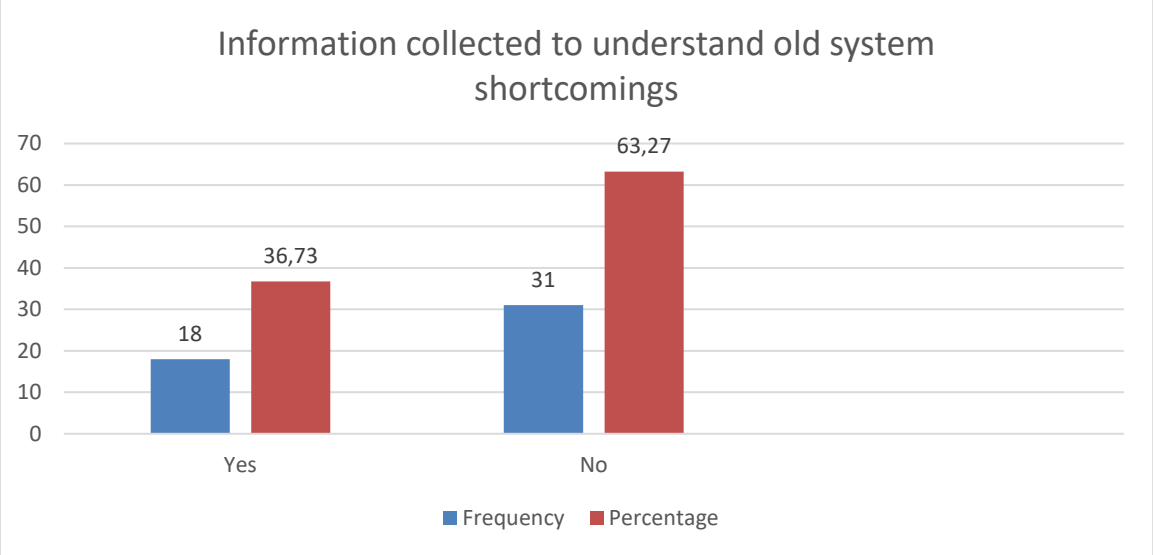


Figure 4.5 reveal that 31 (63,27%) respondents did not witness information being gathered to identify shortcomings of the old system. The first aspect of this finding could pose a threat to the analysis phase of the project which requires in-depth review of tasks and processes as reported in Pasaribu, Anggadwita, Hendayani, Kotjoprayudi and Apiani, 2021:627). 18 (36,73%) respondents confirmed that information gathering was done. This represents the second aspect of these findings, as representing a balanced view of the project- positive and negative.

4.5.5 SUCCESSFUL IMPLEMENTATION (QUESTION 13)

Respondents were asked to indicate their perception on the level on implementation of the new business process. This was to validate their awareness of the project being studied. The findings are presented in figure 4.6

Figure 4.6: Successful implementation

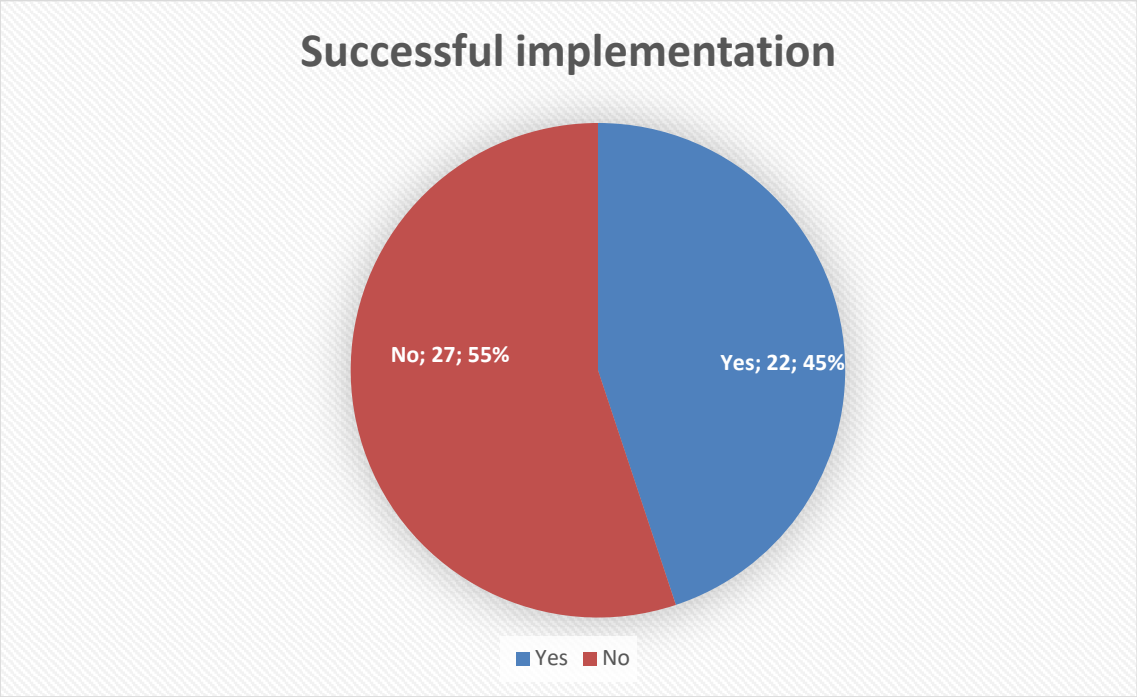


Figure 4.6 indicate that 27 (55%) respondents feel that the project is not complete while 22 (45%) respondents feel that the project is complete. The findings represent diverse views from project team members who feel there are aspects that still require attention and others who feel all the required work has been complete.

4.6 IMPACT OF BUSINESS PROCESS RE-ENGINEERING ON EMPLOYEES' DAILY ROUTINES

The following section discusses the impact of BPR implementation on employee daily routines. This section is important because, as noted in Bhaskar and Singh (2014: 33), routine processes are mostly obscured from top management because their focus is usually not on operations. In answering this research question, respondents were afforded an opportunity to evaluate the BPR impact based on perceived improvements and changes regarding respondents' positions.

4.6.1 RESPONDENTS' PERCEPTION OF IMPROVMENTS RESULTING FROM NEW BUSINESS PROCESSES (QUESTION 11)

Respondents were asked to identify improvements as a result of the new business processes. Seven options were given as represented in Figure 4.7 Since the respondents were all part of the workforce and had knowledge about work in the University, the 'do not know' choice was not applicable and was not provided.

Figure 4.7: Identification of improvements

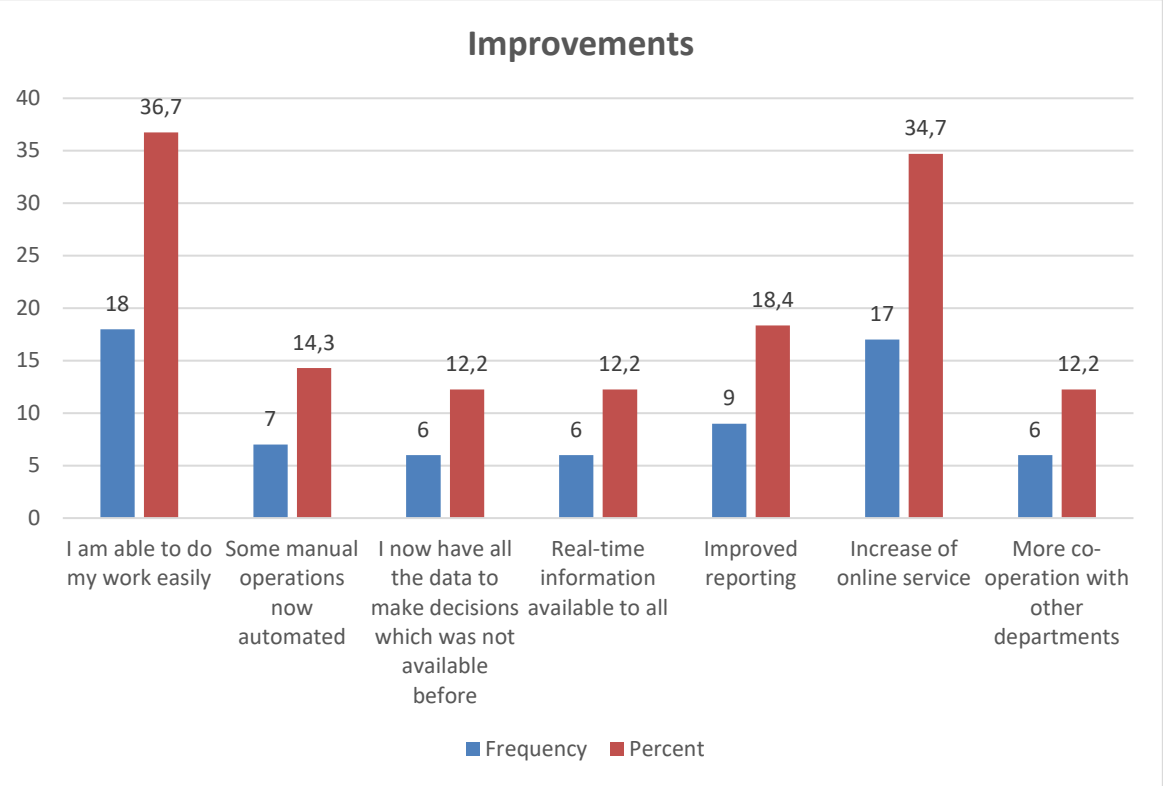


Figure 4.7 represents the results from responses received. The ability to do work easily was mentioned by 18 (36,7%) respondents, followed by 17 (34,7%) who cited an increase of online services. These were followed by improved "reporting, automation" and in equal measure of 12,2% "co-operation with other departments, available of online information and on-time data availability".

Respondents indicated a positive impact on their daily routines, 36.7% reported that they are able to do their work easily. This statement is an indication of improved operational processes in the department. Similar research conducted by Al-Mashari and Zairi (2000:11) found that BPR projects that focus on core

processes achieve the desired outcomes. The cost of doing work has decreased as less resources are required and the time it takes to do the work has decreased, as confirmed by 34,7% who witnessed an increase of online services.

Increased online services indicates that respondents are able to propel the University to compete successfully. This impact on employees' daily routine will enable employees to improve student satisfaction (Sohail, Daud and Rajadurai, 2006:287). Academic records and other student services will be available online and students will not be required to physically go to offices, to access these services.

Corporate governance was the third highest rated aspect on improved respondent daily routine, with 18.4% citing improved reporting. This category of respondents agreed that BPR impacted the corporate sector positively. This indicates that the University is now more likely to meet statutory reporting deadlines and standardisation as well as save on stationery.

4.6.2 PROCESSES BENCHMARKED (QUESTION 14)

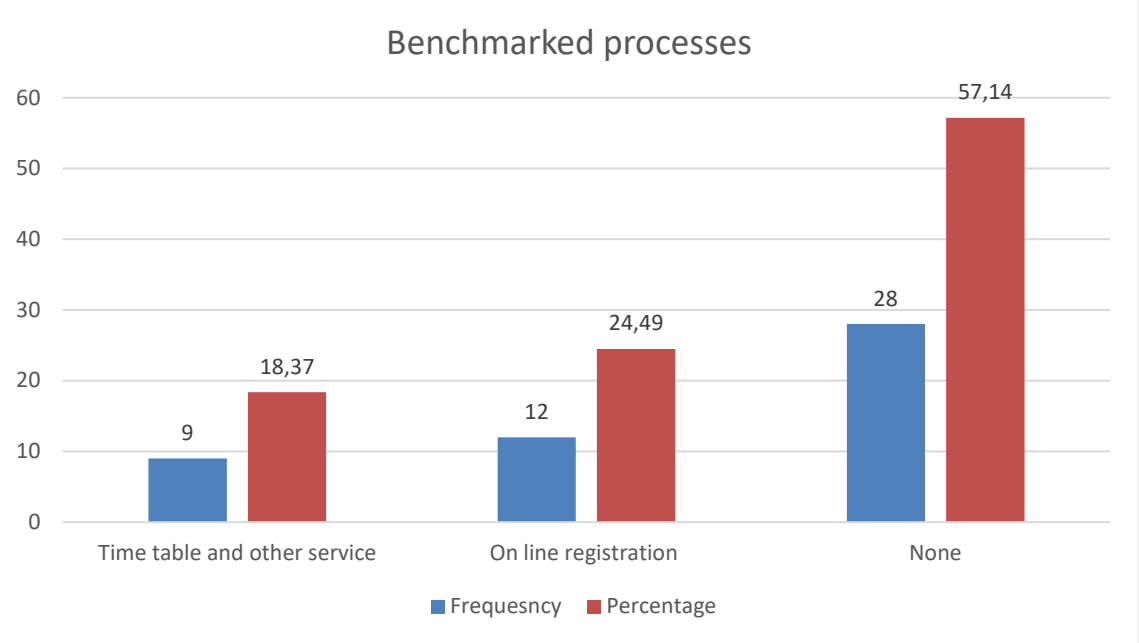
Respondents were asked to identify processes they know to have been benchmarked with other institutions. This was done via an open-ended question. Prior to answering this question, a list of possible answers was drawn, which the respondents did not have access to, 3 possible processes were identified; (1) Online registration, (2) Time table and other services, and (3) None. The findings presented in Table 4.3 and Figure 4.8 are represented below:

Table 4.3: Benchmarked processes

Response received from participants	Code
NONE & Blank answers	None
CLAIMING ON IENABLER	On line registration
ONLINE REG	On line registration
STUDENT ALLOWANCE SYSTEM	On line registration
ACADEMIC RECORDS	On line registration
CUSTOMER SERVICE	On line registration
HOW THEY DEAL WITH THE NEW SYSTEM	On line registration
ONLINE CLAIMS	On line registration
ONLINE REGESTRATION	On line registration

ONLINE REGISTRATION	On line registration
STUDENTS ENROLLMENT	On line registration
REGESTRATION	On line registration
DATA INTEGRITY	On line registration
MARKETING STRATEGIES THROUGH OUR MARKETING DEPARTMENT. WORK INTERGRATED TO ALL DEPARTMENTS	On line registration
IDSC	Time table and other service
WORKFLOWS AND OTHER BUSINESS PROCESSES	Time table and other service
EVENING CLAIMS BEING IMPROVED ON AVERAGE BUDGET NOT PER HOUR	Time table and other service
GENERATING LIST OF STUDENTS GRANTED SUP.	Time table and other service
OPERATIONAL COSTS	Time table and other service
THE USER FRIENDLYNESS OF THE NEW SYSTEM	Time table and other service
IDENTIFICATION OF GAPS IN THE CUSTOMER SERVICE	Time table and other service
STUDENTS PAYMENTS	Time table and other service
TIME TABLE	Time table and other service

Figure 4.8: Benchmarked processes



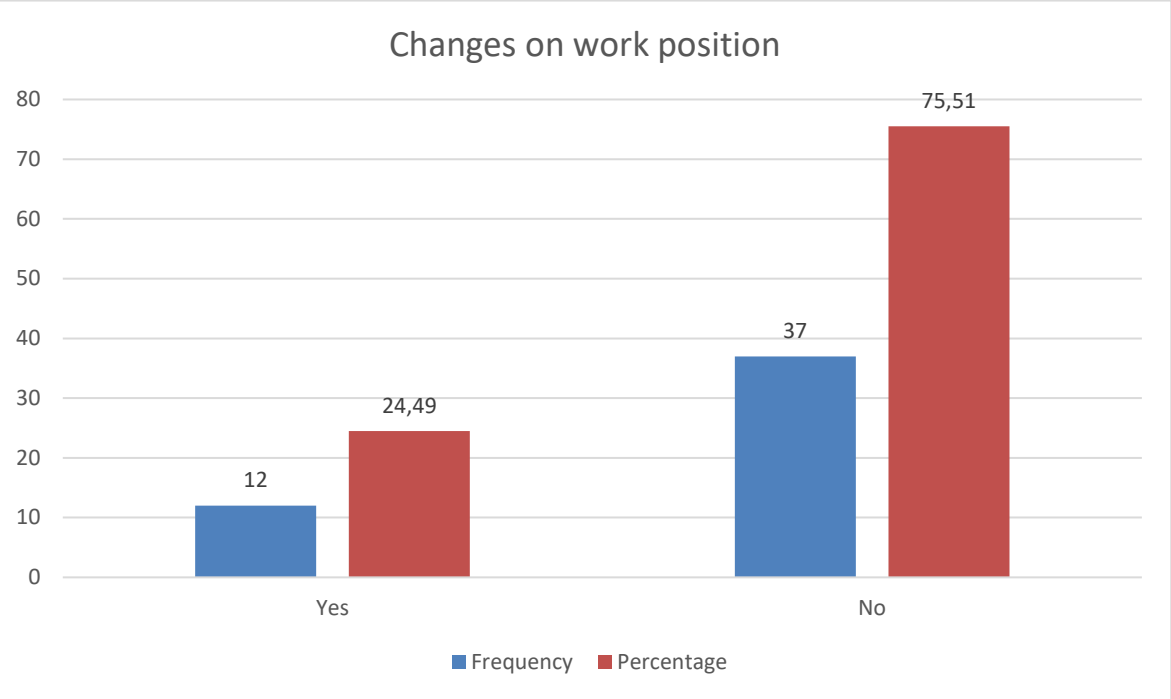
Findings in figure 4.8 indicate that most respondents 28 (57,14%) feel that no benchmarking was conducted. Online student registration was cited by 12 (24,49%) respondents to have been benchmarked and 9 (18,37%) mentioned timetable and other services have been benchmarked. This indicates that the level of benchmarking was not high, but operational processes with the department were benchmarked. The findings confirm the use of one BPR tool, benchmarking,

and that the university made efforts to learn from other “business counterparts” (Harb and Abzid, 2018:101) in higher education.

4.6.3 Changes on Employees’ Work Position (Question 12)

BPR is known to affect job positions when implemented because in most cases manual operations become automated. It is this automation that eliminates some of the processes that affect job positions. Respondents were asked to indicate whether the project resulted in changes to certain job positions. Figure 4.9 represents feedback from respondents.

Figure 4.9: Changes on work positions



The findings indicated that only 12 (24.5%) respondents witnessed changes to positions. This presents a balanced view in BPR implementation relative to job positions as seen in Al-Mashari and Zairi (2000:21), where job positions change when new definitions and structures are presented.

Various aspects of changes to employee positions are affected in BPR implementation as observed by Al-Mashari, Irani and Zairi (2001:445), including organisational structure, skills requirement and roles and responsibilities. Changes to an employee’s daily routine can be possible due to organisational structure. In

the above findings the structure did not change much. Skills requirements change when new processes are introduced, and this is also linked to changes to roles and responsibilities. When a new system is implemented, and some processes get eliminated or changed, employees are reassigned roles.

4.6.4 RESPONDENTS' PERCEPTION OF DAILY ROUTINE CHANGES (QUESTION 17)

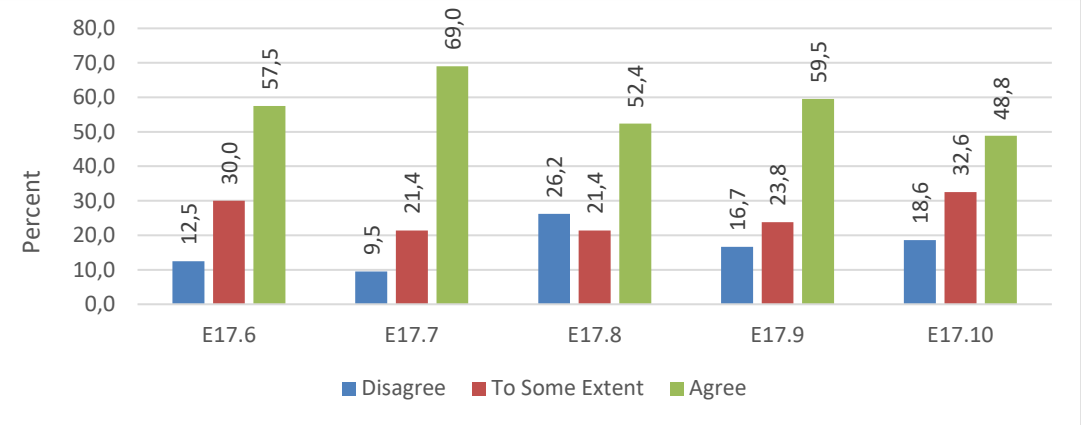
Respondents were asked to indicate daily routine changes as a result of BPR implementation. Table 4.5 shows the questions asked in this regard, and Figure 4.5 shows the analysis of these questions. The rest of the statements are discussed in section 4.5.10.

Table 4.5: Questions on respondent daily routine changes

Departments are now able to rapidly respond to problems	E17.6
New processes facilitate our work	E17.7
Front line employees are empowered to make decisions through new system	E17.8
Information sharing has improved	E17.9
New processes facilitate openness on decision making	E17.10

The results presented in Figure 4.10 show that the selected questions were based on the same theme about changes in respondents' daily routines.

Figure 4.10: Results of changes in respondent daily routines



Results in Figure 4.10 reveal that respondents were aware of the changes to their daily routines as prompted by the implementation of BPR in the Department of Academic Administration. These answer the research objective - to investigate the impact of BPR on respondents' daily work routines.

Lead time has probably decreased as respondents agreed that departments are now able to rapidly respond to problems (E17.6=57.5%). The new processes enable work (E17.7=69.0%). Findings in E17.8 (54.4%) confirm the assertion by Bhaskar and Singh (2014:33) that BPR compels managers to give control to functional areas for it to succeed. Interestingly, 59.5% of respondents agreed that information sharing (E17.9) were implemented, bearing in mind that section 4.4.4 shows that data security was mentioned as the main goal that this project sought to achieve. Openness on decision making (E17.10=48.8) were supported by the majority of respondents.

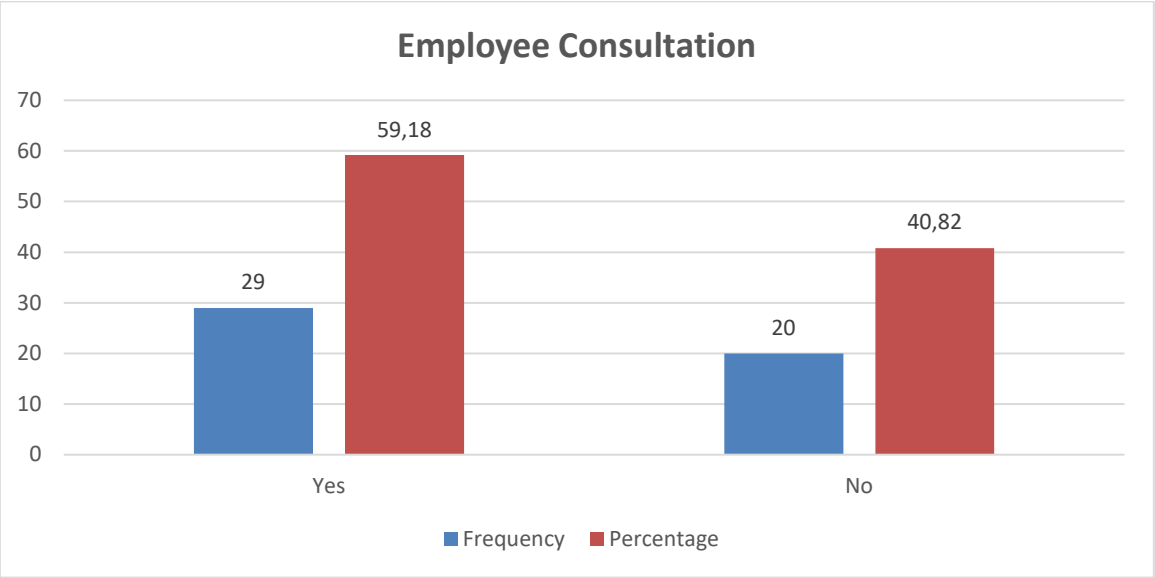
4.7 SUCCESS OF BUSINESS PROCESS REENGINEERING PROCESS

This section discusses the research objective which was to investigate the perception of respondents regarding the success of the BPR process. Respondents were asked various questions to determine their opinions on factors they thought contributed to successful implementation.

4.7.1 EMPLOYEE CONSULTATION (QUESTION 9)

Respondents were asked to express their perceptions regarding the opinion about level of consultation before, and during implementation of BPR. Al-Mashari and Zairi (1999:89); Hrabala, (2017:36) observe that in higher education, it is important to understand old systemic processes before embarking on new improvements. In this respect employee consultation is central in terms of understanding underlying problems and general communication in terms of desired results and possible changes. Figure 4.11 represents responses received regarding employee consultation.

Figure 4.11: Employee consultation



The results in Figure 4.11 present answers to the research objective about investigating employee perception of the success of the BPR process. The majority of respondents (59%) confirm that consultation took place, and 41% answered that it did not. The findings support the search of (Bahramnejad, Sharafi and Nabiollah 2015:29), who report that it is important to consult staff and managers to solicit their opinions when embarking on BPR.

4.7.2 MEETINGS ATTENDED (QUESTION 4)

Respondents were asked to indicate the meetings they attended. Meetings provide an important planning platform and help to identify focus areas when implementing a project. Three options were given; benefits of the new system, training on the use of the new system and how your job would be affected by the new system.

Figure 4.12: Meetings attended

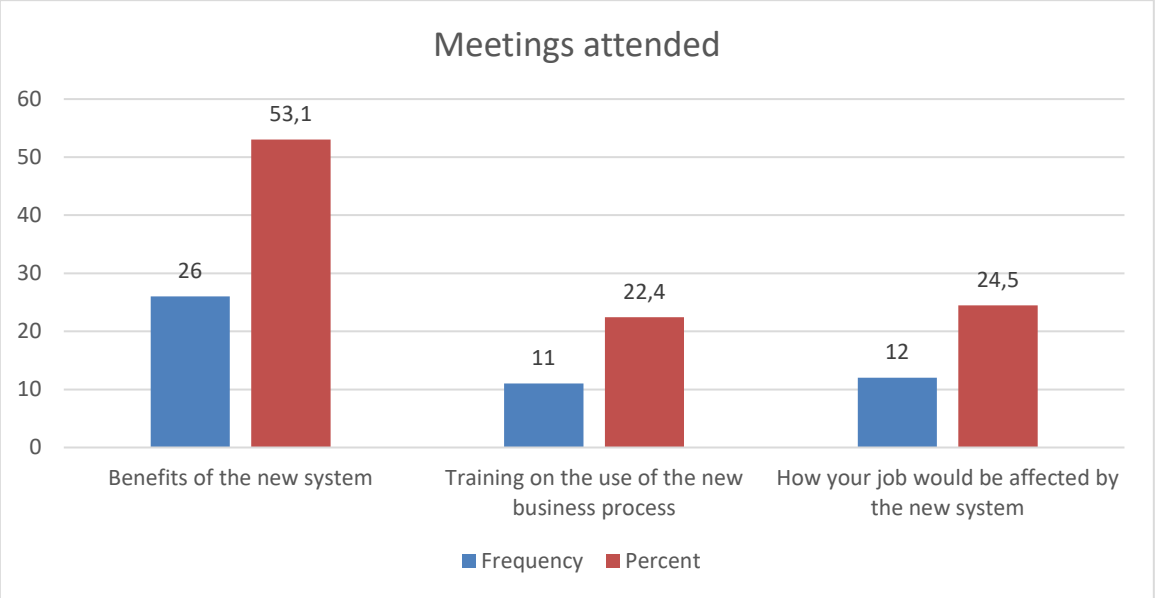
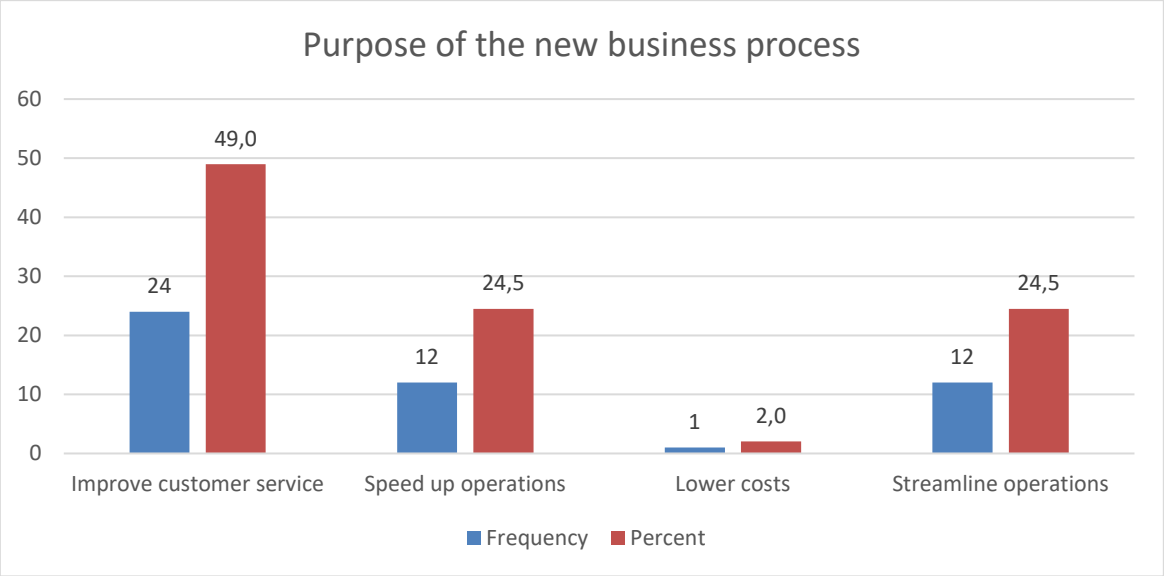


Figure 4.12 indicates that the implementation team was focused on planning around benefits of the new system as indicated by 53.1% of respondents. This information is relevant in providing further evidence that the human element was addressed upon project implemention. Bahramnejad, Sharafi and Nabiollahi (2015:29) observe that meetings provide managers and staff an opportunity to discuss aspects of BPR. Benefits of a new system cannot occur without focusing on current shortcomings, because new designs are based on these deliberations.

4.7.3 PURPOSE OF IMPLEMENTING NEW BUSINESS PROCESS (QUESTION 6)

Operational processes are central to the achievement of desired improvement. Respondents were asked to indicate the purpose of implementing a new business process. This sought to identify goals and objectives of the project. The findings are presented in the figure 4.13

Figure 4.13: Purpose of implementing new business process

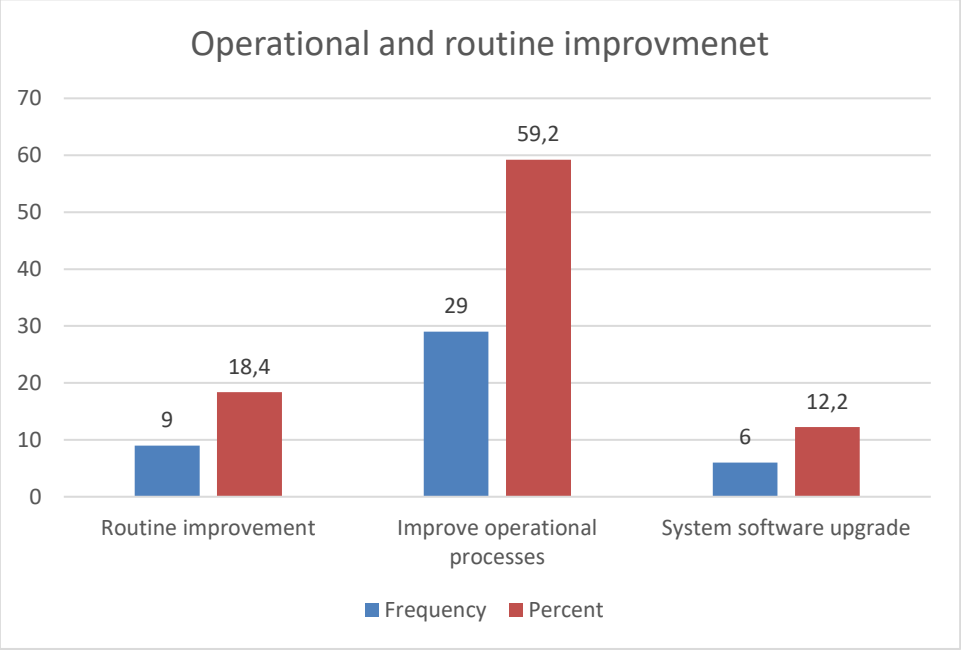


The findings reveal customer improvement was the main purpose of the project, as cited by 24 (46,9%) of respondents. Studies by Mohapatra, Choudhury and Ganesh (2017:461); Edoun, Fotso and Mbohwa (2018:1), identify a similar trend that improvement of customer service should be the focus of BPR projects.

4.7.4 OPERATIONAL CHALLENGES AND ROUTINE IMPROVEMENT (QUESTION 15)

Respondents were asked to indicate their perception whether they think the improvement sough to address operational challenges or whether it was a routine improvement. The purpose of this question was to ascertain the BPR characteristic in the project.

Figure 4.14: Operation challenges and routine improvement

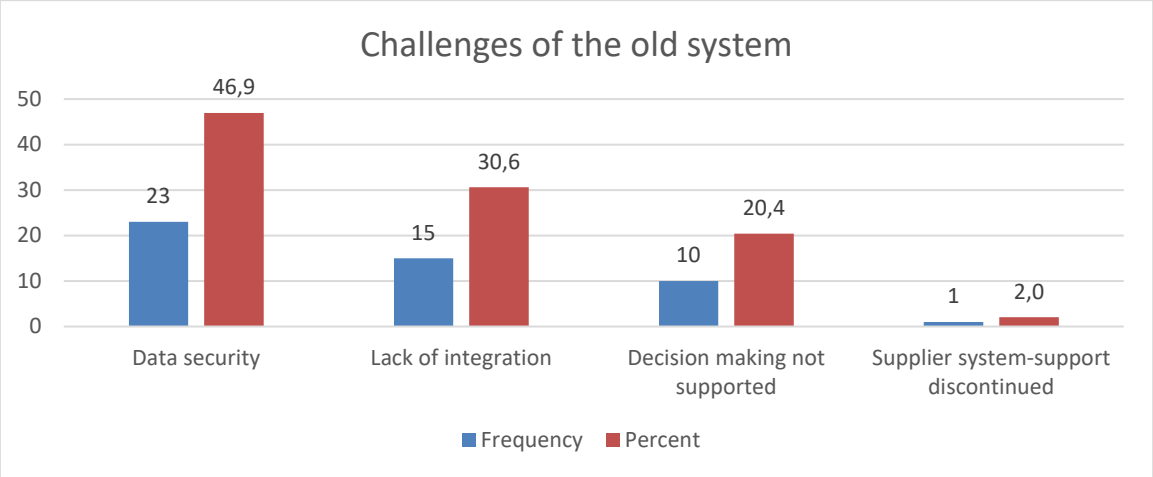


Findings confirm that this project fit the description of BPR as it incorporates and important component of BPR. Abdous (2011:427) report that higher education institutions undertake BPR to improve rethinking existing processes. Most of the respondents 29 (59,2%) agreed that this project sought to improve operation processes. The findings confirm the purpose of the project is compatible with other BPR projects (Lucas, 2016:18; and Nkomo and Marnewick, 2021:1).

4.7.5 CHALLENGES OF THE OLD SYSTEM (QUESTION 5)

Respondents were asked to identify the challenges of the old system, as shown in Figure 4.15

Figure 4.15: Challenges of the old system

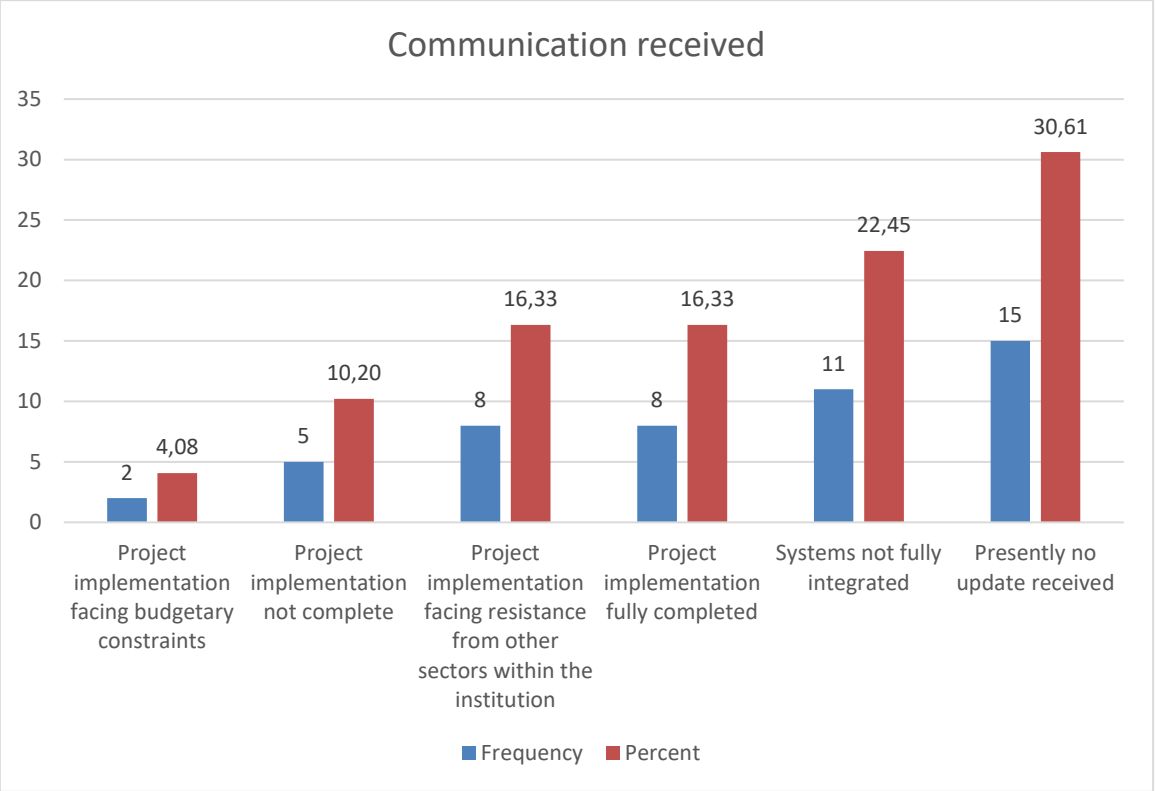


The findings in Figure 4.15 confirm the assertion by Van der Vyver and Rajapakse (2012:780) that BPR projects in the public sector are identifiable as focused and goal orientated undertakings. Figure 4.5.5 represents respondent responses and 42.9% cited data security, as the main challenge that the project sought to address. Data security is most relevant challenge in the operational processes of the Department of Academic Administration. These findings also confirm previous studies that found successful BPR projects had clarity that related to their operational challenges as in the case of the Department of Academic Administration (Khairnar, 2015:56).

4.7.6 COMMUNICATION RECEIVED (QUESTION 7)

Respondents were asked to indicate the type of communication they had received regarding the project. They were given six options, presented in Figure 4.16.

Figure 4.16: Communication received



Findings in Figure 4.16 provide answers to the research objective regarding respondent perception on BPR success. The findings indicate that 15 (30.6%) respondents reported that no update had been received. Habib (2013:1) report that changes not properly communicated can lead to failure. Hence, this is seen as a challenge. However, only 2 (4,08%) respondents said the project was facing budgetary constraints. These findings confirm that this project employed effective communication which is a “major key to success BPR-related change” (Al-Mashari and Zairi, 1999:88), because 69.3% of respondents had received particular messages regarding this project.

4.7.7 AREA INVESTMENT LEVEL (QUESTION 18)

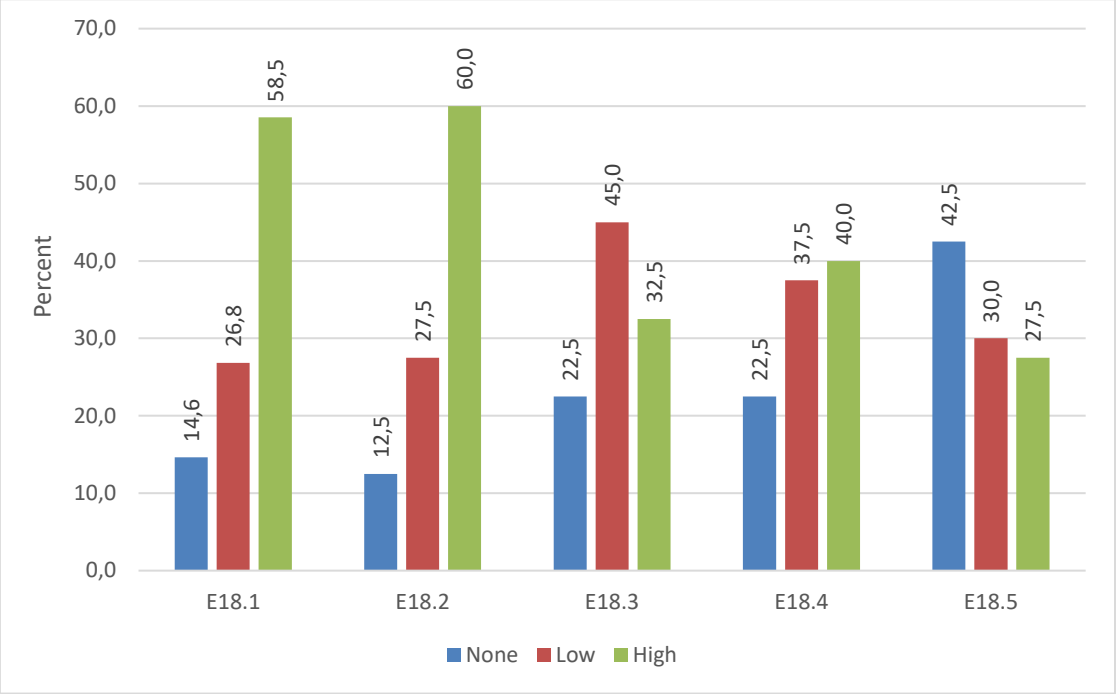
The survey gathered information pertaining to respondents’ view on the level of investment in 5 areas that affect the project. Table 4.6 identifies labels used in figure 4.17 of the findings.

Table 4.6: Labels indicating level of investment

Item	Label
Training of employees to use new system	E18.1
IT software / system	E18.2
Consultants	E18.3
Benchmarking and related tours	E18.4
Reorganizing of office space	E18.5

Findings are presented in Figure 4.7.7.1

Figure 4.17: Level of investment

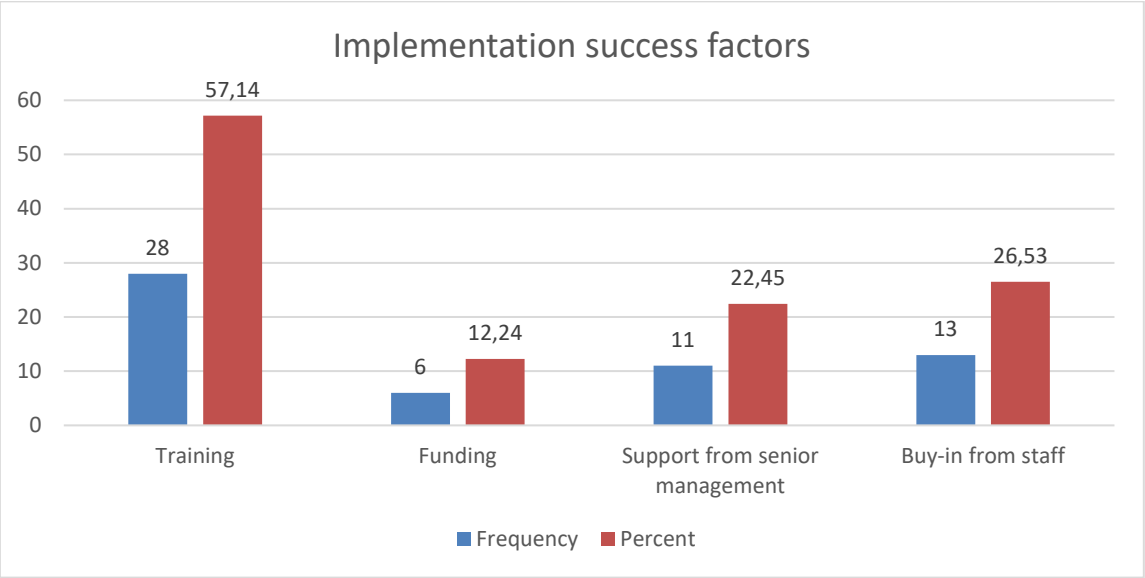


IT received the highest investment (60%). This confirms previous studies on higher education projects on BPR, which indicate that institutions invest heavily to leverage IT and to use the latest systems (Abdous, 2011:427 and Sohail, Daud and Rajadurai, 2006:280).

4.7.8 IMPLEMENTATION FACTORS CONTRIBUTING TO SUCCESS (QUESTION 8)

Respondents were asked to identify factors considered to have positively contributed towards the success of the project. From four options given respondents could choose any number of options based on their experience (Figure 4.18).

Figure 4.18: Implementation success factors



The findings shown in Figure 4.18 reveal that 57.1% of respondents cited training in their answers. This confirms the study by Al-Mashari and Zairi (1999:89) that training is an important component of BPR success.

Staff buy-in was mentioned as the second most important factor (26.5%) which suggest that the respondents were empowered, through training, and felt confident with the change. Sibhato and Singh (2012:11) concluded that in higher education institutions empowerment of staff contributes positively to BPR success.

Figure 4.5.8 reveals various perceptions regarding senior management support. Only 22.4% respondents felt that senior management support was important, while in previous studies it was the most important (Al-Mashari and Zairi, 1999:90; Sohail, Daud and Rajadura, 2006:282; Habib 2013:2).

4.7.9 STRATEGIC GOAL (QUESTION 16)

Any BPR undertaking is strategic in nature as it affects the entire institution and has long term implications for the institution (Mohapatra and Choudhury 2016:514). In evaluating employee perception of BPR implementation success, respondents were asked to identify one strategic goal that was being met with the

new system. Respondents were given two options: student enrolment and processes including payroll.

Figure 4.19: Strategic aspects that were met with the new system

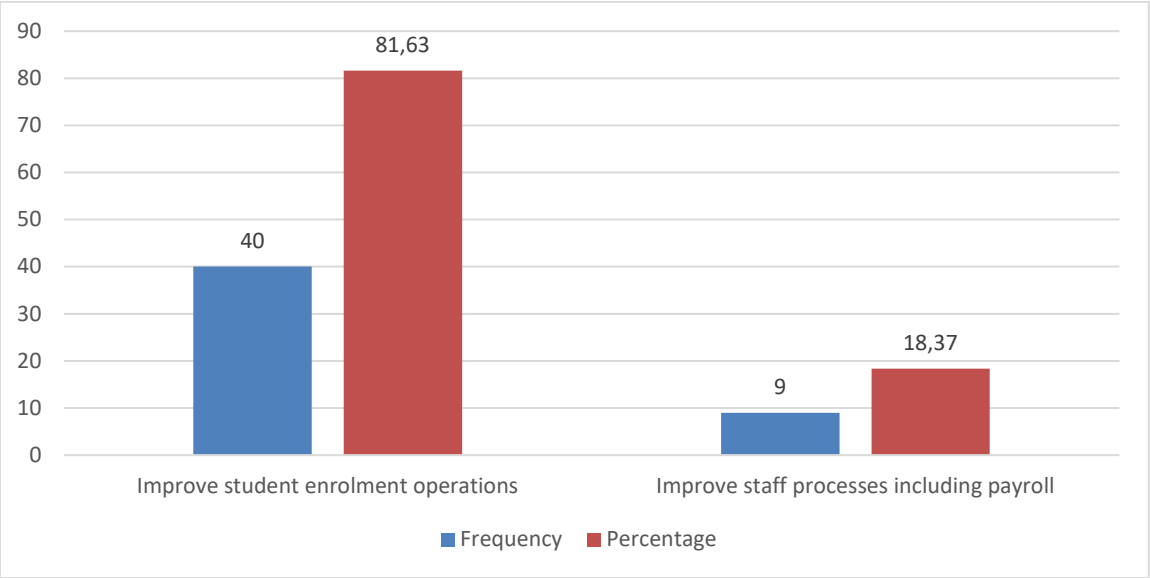


Figure 4.19 represents responses regarding the strategic goals that were being met by the new system. Improvement of student enrolment was mentioned by 80% of respondents while 20% mentioned staff processes including payroll. Student enrolment is a strategic domain of the Department of Academic Administration. The findings support the Sohail, Daud and Rajadura (2006:282) study, that focusing on core operational processes will lead to successful implementation if supported by strategic planning.

4.7.10 SUCCESS OF IMPLEMENTATION (QUESTION 17)

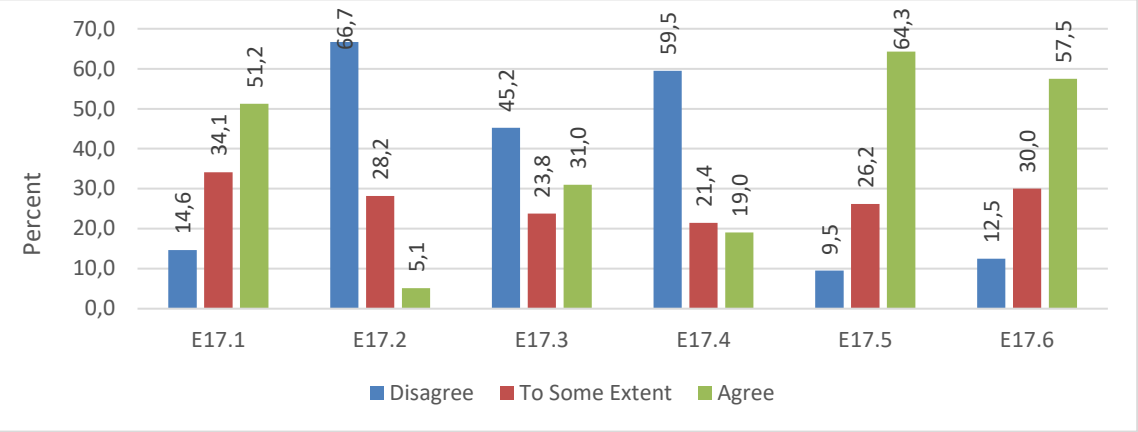
One of the objectives of this study was to investigate the perception of employees regarding the success of the BPR process. This section completes previous discussion in section 4.6.4. Specific questions were asked regarding employee experiences during the implementation process, as presented in Table 4.5.10 and analysed in Figure 4.5.10.

Table 4.7 Question on employee implementation factors

Employees were not sure the system would deliver on expected results	E17.1
There was no support from senior management for the project	E17.2
There were disruptions of processes during implementation	E17.3

There was discontinuity of team members during planning and implementation	E17.4
Were you afforded the opportunity to review the system before it was fully implemented	E17.12
Training and meeting discussions were limited to understand our processes and how these interact with those from other departments	E17.13

Figure 4.20: Success of implementation



There was a high level of uncertainty during the implementation period as indicated by 51.2%of respondents (E17.1). This development indicates lack of attention to the human dimension of this project, this poses a serious threat to the project success as human dimensions are central higher education BPR project success (Harb, 2018:102; Nkomo and Marnewick 2021:3).

Senior management support was high (E17.2=66.7%). In previous (4.7.8) section, 22,45% of respondents cited senior management support has positively contributed to BPR success. The two dimensions to senior management support as indicated by 667% of respondents. The first dimension of this success factor is the consistency with other studies that senior management support is identified in all successful BPR projects (AbdEllatif, Farhan and Shehata, 2017:10; Ahmad et al, 2007:452)). The second aspect is deduced to indicate that since senior management support is identified, the project then was aligned to the “strategic plan and vision” (Naidoo and Sibiya, 2018:252) and relevant processes were identified for redesign.

Disruptions during implementation were minimal as reported by 31% of respondents (E.17). These findings relate to technology which connects all the functions and operations in the university. Previous studies allude to the

importance of IT to the success of BPR projects (Ahmad et al, 2007:454; AbdEllatif, Farhan and Shehata, 2017:11; Pasaribu et al, 2021:623).

The implementation team is consistent with BPR implementation success, as 59.5% (E17.4) respondents indicated that the implementation team was kept intact during implementation phase. AbdEllatif, Farhan and Shehata contend that employees involved in BPR should work in a cooperative and friendly environment (2017:10).

Nkomo and Marnewick assert that training and testing the new system leads to successful BPR projects, otherwise the system deteriorates (2021:4). Respondents were given the opportunity to test the system (E17.12=46.5%). Training and meetings were conducted in line with respondent expectations (E17.13=42.9%). Although the numbers are not high these two success factors were incorporated in the project

4.8 SUMMARY

This chapter presented insight and analysis of the findings based on data collected.

Findings are consistent with the problem statement and the literature review. The empirical component of data analysis was presented. Results were graphically presented in tabular format and figures were used. Since this study focused on a UoT in SA, into the impact of BPR implementation, the results can be generalised to all the employees as they form part of the population of this study.

The following chapter will conclude the research and provide recommendations and proposals for future research.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The primary objective of this research was to investigate the impact of BPR in the Department of Academic Administration in a UoT in South Africa. The motivation for this study emanated from the fact that BPR had been undertaken in the UoT, and there was a need to assess its impact. There was also a need to add to the available literature on evaluation of BPR in higher education.

This chapter presents the conclusions and recommendations that arise from findings and analysis presented in Chapter 4.

5.2 DISSERTATION SUMMARY

This section provides a summary of each chapter contribution.

Chapter 1 introduced and demarcated the study. The research problem as well as the purpose and objectives of this study; the research questions, and the methodology employed was presented. The chapter further provided an overview of previous research pertaining to BPR and the higher education sector in South Africa.

Chapter 2 reviewed the literature relevant to BPR in higher education. The literature review covered factors influencing BPR implementation methodologies thereof, highlighting the differences between traditional and second-generation methods. Enablers or key success factors were covered and measurement criteria discussed.

Chapter 3 presented the research methodology and provided a detailed discussion on research design, sampling, data collection and analysis. The research tool was presented. Validity and reliability were discussed, including the reasons why the findings of this study may be regarded as valid and reliable.

Empirical results and of this study are presented in **Chapter 4** using tables and figures. were used to present the results of the questionnaire. Chapter 4 revealed how respondents answered questions related to the research question.

Chapter 5 presents conclusions, recommendations, study limitations and recommendations for future research.

5.3 MAJOR FINDINGS

Most of the funding went into supporting IT related systems as shown in section 4.7.7 by 60% of respondents.

In section 4.7.8 it was revealed (57%) of respondents that training is the most important success factor for BPR implementation.

The study findings show that BPR characteristic aligned to the strategic role of the Department of Academic Administration, in section 4.7.9 is shown by 81% of respondents.

The project was generally successful and beneficial to employees as seen in their perceptions of the developments, though some areas still require improvement.

5.4 CONCLUSIONS ON OBJECTIVES

This section discusses how each objective was achieved.

5.4.1 **OBJECTIVE ONE:** TO EXAMINE EMPLOYEES' AWARENESS OF THE BROAD PRINCIPLES OF BUSINESS PROCESS RE-ENGINEERING IMPLEMENTATION IN IN THE HIGHER EDUCATION INSTITUTION UNDER STUDY

The results confirm awareness of the broad principles of BPR. Respondents indicate that they were informed about the project and they expressed their support for the project to be undertaken. The study also revealed high levels of familiarity

with the term ’BPR’ amongst staff. Staff consultation and other matters concerning human concerns were taken into consideration by the project leaders.

Based on the information above, it can be concluded that respondents displayed awareness about the project being implemented.

5.4.2 OBJECTIVE TWO: TO INVESTIGATE THE IMPACT OF BUSINESS PROCESS RE-ENGINEERING ON EMPLOYEE’S DAILY WORK

The main issues the majority of respondents agreed with is that online services have increased and that the new system enables them to do their work more easily. This evidence shows a positive impact on respondents’ daily routines, and means that the system has now been configured to deliver on BPR improvement.

Further evidence is that job positions have not been affected, as indicated by the majority of respondents. Other aspects include responding rapidly to problems, will an increase in information sharing.

Based on the above information it can be concluded that respondent’s daily routine has been positively affected.

5.4.3 CONCLUSIONS ON OBJECTIVE THREE: TO INVESTIGATE PERCEPTION OF EMPLOYEES ON THE SUCCESS OF BUSINESS PROCESS RE-ENGINEERING PROJECT

Respondent perception on the success of the BPR process was the third key issue of this study. Literature on BPR highlighted key success factors being: Employee consultation, meetings attended, communication, goals, implementation factors, strategic-thrust and employee implementation factors (Al-Mashari and Zairi, 1999:89; Hrabala, Opletalova and Tucekc, 2017:36; and Singh and Arora, 2018:43).

Results show a moderate level of respondent consultation before and during implementation of the new business process, because respondents were split

almost equally in responding to whether they were consulted. The majority said they were consulted, but that was only 9% more than those who indicated non-consultation.

Key success factors include planning and communication as demonstrated in meetings held, as well as implementation success factors. Findings reveal that the majority of respondents attended meetings to discuss the benefits of the new system. What is revealed in this category is that respondents had enough time to plan how the new system would address their needs and benefit the institution.

Findings reveal implementation challenges including budget, system integration and resistance from other sectors. There is also a lack of communication as some respondents said they have not received any update. A positive in this category was that some respondents said the project is complete. Implementation factors that respondents identified as having a positive impact, included training and staff buy-in. Findings reveal that staff training was the most important factor amongst respondents. A further finding indicated a high level of uncertainty during the implementation period.

BPR success factors included project goals and their strategic role. Findings reveal that the major challenge with the old system (therefore a goal in the BPR strategy) was the problem of data security. Furthermore, it was found that student enrolment was a major challenge with the old system so would be a targeted strategic thrust of this project.

Based on the information above it can be concluded that this study succeeded in answering the research question regarding respondent perception of BPR implementation success.

5.5 RECOMMENDATION FOR SUCCESSFUL BUSINESS PROCESS RE-ENGINEERING

- Recommendations based on objective one:

The University should increase awareness to inform more respondents about the project. Section 4.5.5 shows that there is a significant number of respondents (55.1%) who indicated they were not aware of the project – this can be a source of resistance during implementation.

The section of respondents who were aware of the project expressed their support for the need to implement BPR. There is a need to expose employees to the concept of BPR. Section 4.3.3 revealed that 26.5% of respondents had no familiarity with the term 'BPR'. Exposing more employees to with the concept and methodology of BPR is important because they will then have the required skills to participate positively when it is implemented.

Identification of challenges with the old system appear to have been problematic because most respondents indicated they did not see this activity being undertaken. According to section 4.5.4 the majority of the respondents (63.3%) did not witness this activity. This indicates there could be processes that were overlooked.

- Recommendations based on objective two

The increase of online services, as shown in section 4.6.1, can be expanded to the entire University to benefit research as well as teaching and learning. The University as a whole will then benefit, with an increase in online services will save the time it takes to deliver study material and will also provide students with more flexibility to access learning materials.

While taking into consideration the findings in section 4.3.4 about the limited collection of information on the shortcomings of the old system, the indication that respondents can now do their work more easily, demonstrates that some redundant processes were eliminated through this project. The second highest (36.7%) improvement that respondents identified, was that they are now able to do their work more easily (section 4.6.1). The University could expand BPR to more departments and ensure that they prioritise the task of improving operational processes to empower employees, as identified in section 4.4.3.

- Recommendations based on objective three

Since employee consultation was not carried out fully (as shown in section 4.71), the project leader should consider using other communication mediums to increase consultation, for example forming sub-committees. These sub-committees would increase consultation by using their respective leaders to disseminate and collect information to and from the project team. The more engagement the better, because then team members will be afforded the opportunity to engage in this important undertaking.

Similar departments can gain valuable lessons ensuring they align their project goals to their strategic role in the institution when undertaking BPR. Section 4.7.9 reveal there was careful consideration to ensure that the project supported the strategic role of the department.

Meetings have been very beneficial to the project team and these should not be abandoned when undertaking improvement of operations.

Typical BPR implementation challenges have been identified (in section 4.7.6) and should be addressed. Respondents indicated that there were budgetary constraints; these should be addressed by reviewing the affected activities and reprioritising those that are more important. Employees and departments/sections that are sources of resistance must be addressed. It is the project leader's responsibility to find out what are the issues and to solicit agreement or solutions. There is also an issue regarding system integration. The project leader must solicit more funds to address this matter which is urgent.

Implementation challenges such as uncertainty must be addressed through improved messaging directed to all.

Communication from the implementation team was mixed as shown in section 4.7.9, as some respondents said they had received communication that the project was complete (16.3%) while others (10.2%) were informed that it was not

complete. These mixed messages must be addressed because they can be a source of confusion and lead to failure. For example, employees who know the project is complete might continue doing things that should be discarded based on their knowledge and anticipation that there will be no more changes. Mixed messages must be eliminated so that the implementation team and respondents hold the same information.

Training, staff buy-in and senior management support were mentioned as having a positive impact. Aspects that have contributed to these factors must be transferable to future BPR projects in Examinations and Student Services, for instance.

5.6 CONTRIBUTION OF THE STUDY

This study contributes to the literature on the evaluation of the implementation of BPR in higher education in South Africa.

Based on recommendations an article can be published in one of the academic journals as contribution to the body of knowledge.

The institution may use this study as basis for BPR project implementation across the institution.

5.7 LIMITATIONS

The study is not without limitations, including the following:

- This study was conducted in a UoT in South Africa and focused on the Department of Academic Administration. Limitations in this regard included the anonymity of the organisation and related restrictions. More and precise reporting would have been possible without these restrictions.
- The study was restricted to employees in a few departments of the UoT under study, but it would have been more beneficial to include other departments and students.

5.8 RECOMMENDATIONS FOR FUTURE RESEARCH

In view of the identified limitations, this study proposes the following for future research.

- This study revealed online services have increased, however, these were not defined. Future studies should investigate these services and how they could be expanded to other departments and how they could be improved, bearing in mind that web services may be more expensive compared to App services.

- This study was focused on one department in a UoT. Future research is needed to examine BPR initiatives in other departments and / or in the whole institution.

- In a future study, it would be valuable to expand on the positive impact of the project. This will help management to expand aspects of improved reporting to other operations.

- BPR projects in higher education institutions have not been examined to the same extent as those in private business sector. It would be important for future studies to explore further projects and identify lessons for higher education institutions.

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APPENDICES

Appendix A: Information letter

Faculty of Management Sciences
Department of Public Management & Economics

Date: **27 February 2019**

Dear Participant

I am an M Tech candidate of the Public Management & Economics of the Durban University of Technology. I seek your consent and permission to conduct research on (research title) "**Impact Evaluation of Business Process Re-engineering (BPR) in the Department of Academic Administration at a University of Technology (UoT) in South Africa"**

You have been selected as the target group / person to be included for data gathering. I would appreciate your participation in my research study. The objective of the study is to examine and analyse the broad principles of Business Process Re-engineering (BPR) process implementation in the department of Academic Administration in University of Technology (UoT) and compile recommendations for best practice operations management in the Department of Academic Administration at University of Technology (UoT) to improve efficiency and good governance. I therefore ask your permission to include you in the study.

I wish to assure you of your anonymity and the confidentiality of information solicited from you through interview, questionnaire administered. You can be assured that all information gathered through interviews, will be used for this research purpose only and will be destroyed thereafter.

Thank you for your time and cooperation.

Regards

Xolani Sunshine Kunene – Cell: 082 977 6022 e-mail: xolanikunene@yahoo.com
Student
Contact Details

Shirlene Neerputh – Cell: 083 260 2512 e-mail: sneerputh@uwc.ac.za
Supervisor / Promoter
Contact Details

S Thakur_____
Co-Supervisor/Co-Promoter
Contact Details

Appendix B: Consent form

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Xolani Sunshine Kunene, about the nature, conduct, benefits and risks of this study - **Research Ethics Clearance Number: 089/18**
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature / Right Thumbprint**

I, Xolani Sunshine Kunene (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Mr Xolani Sunshine Kunene	27 February 2019	_____
Full Name of Researcher	**Date**	**Signature**

_____	_____	_____
Full Name of Witness (If applicable)	**Date**	**Signature**

_____	_____	_____
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Appendix C: Gatekeeper letter

Mangosuthu
University of Technology

UMLAZI · KWAZULU NATAL

PO Box 12363 Jacobs 4026 Durban Tel: 031 907 7111 Fax: 031 907 2099

7 June 2018

Dear Mr XS Kunene

Title: Impact evaluation of business process re-engineering (BPR) Ref: ME 6/18/12

The Interim MUT Ethics Committee considered and noted your application for the proposed study at their meeting held on 7th March 2018. The study was approved.

Your acceptance of this approval denotes your commitment to comply with the South African National Research Ethics Guidelines of 2004 as amended, South African Good Clinical Practice Guidelines (2006) as amended, and the MUT Research Ethics Policy, Procedures and Guidelines. The approval is valid for one year, (01June 2018 to 30th June 2019).

Your reference is ME 6/18/12.

Furthermore, permission to conduct the project is granted on the condition that any changes to the project must be brought to the attention of the MUT Research Ethics Committee as soon as possible.

Good luck with your research.

Yours faithfully,

Dr Z.L. Kwitshana
Interim Chairperson
Ethics Committee
Mangosuthu University of Technology
Tel 031 61992/3; Email: kwitshanezl@mut.ac.za; Skype ZLungile.KWitshana

Appendix D: Research questionnaire

RESEARCH QUESTIONNAIRE

SECTION A: BACKGROUND INFORMATION

1. Indicate your response by marking a cross (x) against the appropriate block using the scale below.

Indicate your gender	Male		Female	
Which department type do you fall under?	Academic		Support	
How long have you been working in this University of Technology?	Less than 3 years		More than 3 years	

SECTION B: BROAD PRINCIPLES OF BPR

2. Indicate your response by marking a cross (x) against the appropriate block using the scale below.

Are you aware of new business processes that have been implemented in the last 2 years, e.g. to improve customer service?	Yes		No	
If you answered yes above, do you think the new business process was necessary?	Yes		No	

3. Which of the following best describes your level of familiarity with the term Business Process Re-engineering (BPR)

Very familiar	
Neutral	
No familiarity	

4. Indicate if you attended any of the meetings below

Benefits of the new system	
Training on the use of the new business process	
How your job would be affected by the new system	

5. Which of the following would you identify as a major challenge with the old system?

5.1 Data security	
5.2 Lack of integration	
5.3 Decision making not supported	
5.4 Supplier system-support discontinued	

6. What was the major purpose of implementing new business process?

6.1 Improve customer service	
6.2 Speed up operations	
6.3 Lower costs	
6.4 Streamline operations	

SECTION C: DOMINANT FACTORS FOR HIGHER EDUCATION

7. What communication have you / your department received regarding project implementation level?

7.1 Project implementation not complete	
7.2 Project implementation facing resistance from other sectors within the institution	
7.3 Project implementation fully completed	
7.4 Project implementation facing budgetary constraints	
7.5 Systems not fully integrated	
7.6 Presently no update received	

8. Which of the following factors would you describe as most important in the success of implementing new business processes?

8.1 Training	
8.2 Funding	
8.3 Support from senior management	
8.4 Buy-in from staff	

9. Was there employee consultation before and during the implementation of the new business process?

YES	
NO	

SECTION D: LEVEL OF IMPLEMENTATION

10. Did you witness information being collected to understand shortcomings of the old system?

YES	
NO	

11. What improvements can you identify with the new business processes?

11.1 I am able to do my work easily	
11.2 Some manual operations now automated	

11.3 I now have all the data to make decisions which was not available before.	
11.4 Real-time information available to all	
11.5 Improved reporting	
11.6 Increase of online services	
11.7 More co-operation with other departments	

12. Did any employee's work position change as a result of the new system?

YES	
NO	

13. Do you think the new business process was fully implemented?

YES	
NO	

14. Indicate processes that were benchmarked with other institutions to be improved with the new project
    a. ……..
    b. ……..
    c. ……

SECTION E: IMPLEMENTATION MODEL

15. Do you think the new process was designed to address operational challenges or it was routine improvement?

15.1 Routine improvement	
15.2 Improve operational processes	
15.3 System software upgrade	

16. Choose one strategic goal (below) being met with the new system?

Improve student enrolment operations	
Improve staff processes including payroll & leave system	

17. Rate the items below in terms of implementation

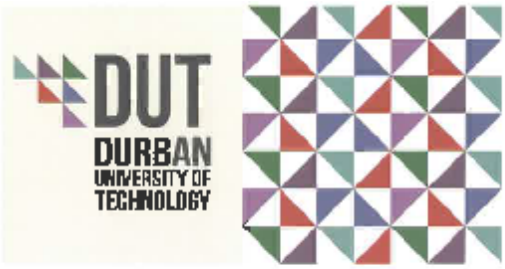
	Disagree	Agree	To some extent
17.1 Employees were not sure the system would deliver on expected results			

17.2 There was no support from senior management for the project			
17.3 There were disruptions of processes during implementation			
17.4 There was discontinuity of team members during planning and implementation			
17.5 The institution's goals were considered when processes were designed			
17.6 Departments are now able to rapidly respond to problems			
17.7 New processes facilitate our work			
17.8 Front line employees are empowered to make decisions through new system			
17.9 Information sharing has improved			
17.10 New processes facilitate openness on decision making			
17.11 External consultants were heavily involved in this project			
17.12 Were you afforded the opportunity to review the system before it was fully implemented?			
17.13 Training and meeting discussions were limited to understanding our processes and how these interact with those from other departments			

18. Indicate level of investment in each of the areas below.

	High	Low	None
18.1 Training of employees to use new system			
18.2 IT software / system			
18.3 Consultants			
18.4 Benchmarking and related tours			
18.5 Reorganization of office space			

Appendix E: Ethical clearance



Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
1st Floor, Berwyn Court
Gate , Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4000

Tel: 031 373 2375
Email: [illegible]@dut.ac.za
http://www.dut.ac.za/research/ethics_committee/irec_dut_ethics

www.dut.ac.za

27 February 2019

Mr X S Kunene
P O Box 3529
Pietermaritzburg
3200

Impact Evaluation of Business Process Re-Engineering (BPR) in the Department of Academic Administration at a University of Technology (UoT) in South Africa.

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the data collection tool has been approved. Kindly ensure that participants used for the pilot study are not part of the main study.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events (serious or minor) which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely,

Professor J K Adam
Chairperson: IREC

Appendix F: Editing certificate

DR RICHARD STEELE
BA, HDE, MTech(Hom)
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EDITING CERTIFICATE

Re: **Xolani Sunshine Kunene**
Master's dissertation: **Impact Evaluation of Business Process Re-Engineering (BPR) in the Department of Academic Administration at a University of Technology (UoT) in South Africa**

I confirm that I have edited this dissertation and the references for clarity, language and layout. I returned the document to the author with track changes so correct implementation of the changes and clarifications requested in the text and references is the responsibility of the author. I am a freelance editor specialising in proofreading and editing academic documents. My original tertiary degree which I obtained at the University of Cape Town was a B.A. with English as a major and I went on to complete an H.D.E. (P.G.) Sec. with English as my teaching subject. I obtained a distinction for my M.Tech. dissertation in the Department of Homoeopathy at Technikon Natal in 1999 (now the Durban University of Technology). I was a part-time lecturer in the Department of Homoeopathy at the Durban University of Technology for 13 years.

Dr Richard Steele
2020-11-08
per email